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GRAND AWARD WINNER

Chicago Police Department

Using IT to Fight Crime

BY RICHARD PASTORE
Page 56

Assistant Deputy Superintendent
Ron Huberman, who championed the
Chicago PD's winning application, has
worked the streets and understands
what cops need to solve crimes.



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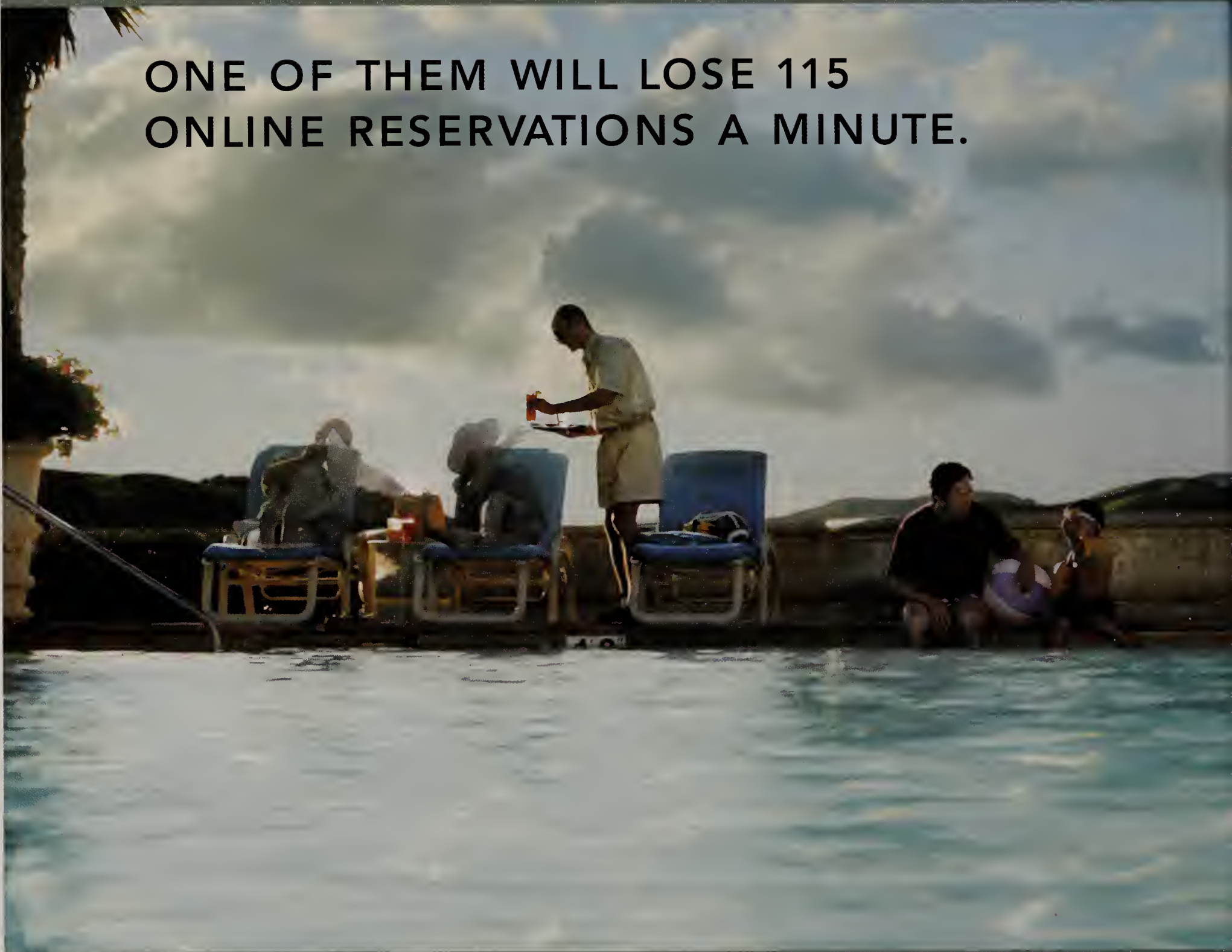
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*Source: IDC, Worldwide Mobile Middleware Competitive Analysis, 2003-
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VOL. 17 • NO. 9 • FEBRUARY 15, 2004

THE 12TH ANNUAL

CIO ENTERPRISE VALUE AWARDS

Special Issue

INTRODUCTION | 52

As always, competition was stiff for our winners. But this year we've added a twist—industry categories allowing companies to compete with business peers for this prestigious award—as well as a special new honor. *By Lafe Low*

GRAND CIO ENTERPRISE VALUE AWARD WINNER 2004

Taking IT to the Street | 56

How the Chicago Police Department used technology to fight crime and become the first Grand CIO Enterprise Value Award winner. *By Richard Pastore*

CHANGE MANAGEMENT

No Small Change | 66

A well-thought-out strategy for change management is critical to the success of any new system. Here's how four organizations reaped big dividends by managing change. *By Todd Datz*

INTEGRATION

They Got It Together | 74

Four winning companies demonstrate the true value of integration by achieving a single view of their customers and their data, saving time and money along the way. *By Lafe Low*

MORE >>>



GRAND WINNER CHICAGO POLICE DEPARTMENT
A new relational database enabled Ron Huberman and his fellow police officers to make Chicago's streets a lot safer—and also win the first-ever Grand CIO Enterprise Value Award.

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Special Issue *continued*

CUSTOMER DATA

Getting to Know Them | 84

Tackling CRM is a huge challenge for companies across all industries. Here's how four of this year's winners are able to gather and mine customer data for real value. *By Meridith Levinson*

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How We Picked the Winners | 92

This year's judges had a tough challenge: For the first time in the CIO Enterprise Value Awards' history, they had to decide the winners based on industry and then pick the grandest of them all.

By Richard Pastore

WINNERS GUIDE

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The winners and runners-up of the 2004 CIO Enterprise Value Awards.

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Our Best Practice Exchange members tell us what their favorite salespeople do right.

By Martha Heller

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Thinking Inside The Box

To help enterprises that are battling various network threats, several hardware vendors are offering integrated security gateways that combine an arsenal of security capabilities in a single box. And for many CIOs, the technology's biggest drawing card is cost.

By John Edwards



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How to Read the Signs | 44

What you can do to lead your organization down the path of technological change. *By Charlie Feld*

MAKING I.T. WORK

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Too many CIOs judge implementations by measuring the technical capacity of a project, instead of considering how it has improved their companies' business.

By Michael Schrage

ESSENTIAL TECHNOLOGY | 103

Buying one security product containing an arsenal of capabilities is convenient, cheap and potentially dangerous.

By John Edwards

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PARC is working on a way to get rid of traditional device drivers.

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Enterprise portals have established themselves as valuable corporate tools—now what?

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Police Power Coming Up Behind You | 18

The Chicago Police Department is using technology to prevent crime and save lives, but its data warehouse could be dangerous if accessed by the wrong hands.

By Richard Pastore

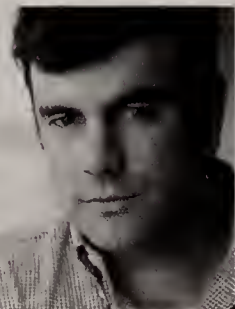
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Abstracts of all the feature stories found in this issue.

“Anybody who believes that cutting IT budgets and reducing the enterprise IT spend are synonymous should not even think of being a CIO.”

—Michael Schrage, CIO columnist, on how CIOs measure IT value Page 48



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ASK THE SOURCES

What Do You Do with Your Databases?

A panel of representatives from this year's CIO Enterprise Value Award winners will be online for the next two weeks to answer your questions about their award-winning endeavors. To post a question and read responses, go to www.cio.com/experts.



From **Ace Hardware**, Vice President of IT Mike Altendorf will field questions about building an enterprise data warehouse to refine pricing structures and more. (See **Getting to Know Them**, Page 84.)



From **Worldspan**, CIO Sue Powers can share pointers on consolidating databases for more efficient delivery of services. (See **They Got It Together**, Page 74.)



From **Continental Airlines**, Alicia Acebo, data warehousing director, can tell you more about using customer and enterprise data to enhance customer loyalty—and revenue. (See **Getting to Know Them**, Page 84.)



From the **Chicago Police Department**, the Grand CIO Enterprise Value Award-winner, Ron Huberman, assistant deputy superintendent of information and strategic services, will elaborate on the CPD's enterprisewide relational database. (See **Taking IT to the Street**, Page 56.)

WATCH THE VIDEO

See CLEAR in Action

Courtesy of the Chicago Police Department, we have a selection of videos showing how actual Chicago cops use the CLEAR data warehouse to catch criminals (see story on Page 56). To see the clips, go to the online version of the article.

LEARN MORE

Change Management: Get Enthused

No Small Change (Page 66) describes how award winners dealt with the change their projects demanded from the enterprise. For more on leading change management, read "A Change of Heart," by columnist Susan H. Cramm, who says the success of change initiatives depends on employee enthusiasm rather than leadership directives. Go to www.cio.com/printlinks.

Our Daily Web

MONDAY Tech Tact

Technology Editor Christopher Lindquist covers what's coming.

TUESDAY Quick Poll

Vote with your mouse, and see how other IT leaders feel about current events.

WEDNESDAY Metrics

Web Writer Jon Surmacz makes sense of the numbers.

THURSDAY Sound Off

Web Editorial Director Art Jahnke opines on managerial, political and ethical dilemmas.

FRIDAY The Big Picture

Charts and graphs that are worth a thousand words.

EVERY WEEKDAY The News

We synthesize the top IT news stories of the day.

Online Exclusive

Attend the Awards Ceremony and Retreat... Virtually

All 10 Enterprise Value Award winners (See **And the Winners Are...**, Page 96) were honored at Sunny Isles Beach, Fla., on Feb. 9. At the retreat, from Feb. 8 to Feb. 10, presentations and panels included Peter Weill on IT infrastructure, Ray Kurzweil on being human, the award winners on the value proposition, and an IT governance workshop. If you missed being there live, or want to relive it, check out our online coverage of the event at www.cio.com/cio04.

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From the Editor



For logistical questions about the Chicago Police Department's massive arrests and incidents database, you can **ASK THE SOURCE**. Ron Huberman, assistant deputy superintendent of the CPD, will be answering reader questions—along with three other winners—until Feb. 29. Go to www.cio.com/experts.

Police Power Coming Up Behind You

THE GUY IN THE SUV in front of us, stuck in Chicago traffic with about a million other cars, lives in Virginia, has not been arrested in the past several years, has one outstanding ticket for speeding (in Virginia), and is six months delinquent in renewing his registration.

I know this because I'm in a cop car, right on his tail. We've just entered his plate number into the MicroSlate notebook mounted on the center console of our unmarked cruiser. A few more clicks, and we probably could have found out when he bought the SUV and what he paid for it.

I'm in the back of the cruiser as part of my reporting on the Chicago Police Department's data warehouse and application suite that won the 2004 Grand CIO Enterprise Value Award. You can read on Page 56 how this data-rich environment helps battle crime in Chicago and beyond.

Chicago patrol officers and desk-based detectives now have at their fingertips access to 200GB and nearly 8.5 million records of arrests and other incidents. Type in an address—say, the Krispy Kreme on the corner or your neighbor's house—and up will pop a list of all reported incidents for that location. Access a known offender, and you'll get a list of his addresses and aliases, and high-res images of his mug shots and tattoos (tattoos are the criminal equivalent of bar codes and are put to the same use by the cops).

All this information can and does prevent crime and save lives. But I can't help but wonder what could happen if these tools fell into the wrong

hands—a detective with a vendetta, a gang leader hacking through the firewall to find a witness against him. (FYI: I'm making no judgment, but Attorney General John Ashcroft's FBI is already accessing Chicago's database.)

Of course, the Chicago PD has installed state-of-the-art security. Firewalls, encryption, passwords. Access is determined by your role on the force. But perhaps the biggest safeguard is that there is a continuous audit trail of any and all system use. That has its own privacy ramifications, with which the police union will grapple. But as the SUV driver with the expired registration goes his merry way, never suspecting that a stranger just took a peek into his life, it makes me feel better.

ERRANT ILLUSTRATION

A rare lapse in attention to detail recently caused inappropriate content to find its way into print. Our Jan. 15, 2004, issue featured an illustration, in the "Essential Technology" section, that we wish we'd looked at a lot more closely. The art in question could reasonably be seen as insensitive and offensive. It was not at all what we intended to convey. We apologize for our lack of vigilance.

Richard Pastore, Editor
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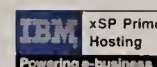
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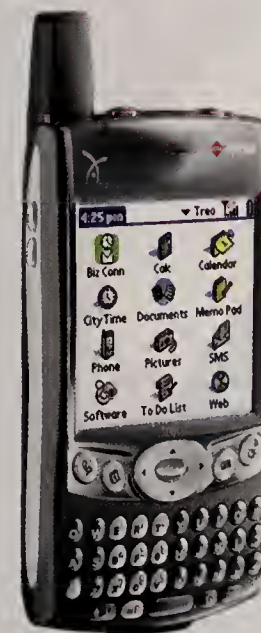
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the **NEW** the **HOT** the **UNEXPECTED**

Edited by Michael Goldberg

TECHNOLOGY INVESTMENTS

CIOs Steer Venture Capitalists' Moves

AT NEW ENTERPRISE ASSOCIATES' first CIO powwow last summer, top IT execs from companies such as ChevronTexaco, Marriott International and Safeway shared notes about doing more with less.

that improves efficiency on factory floors. FactoryWare also purports to meet CIOs' demands for improving ROI. Heller says it's clear that companies are leaning toward smaller investments in applications that

help them squeeze more out of their existing IT systems. So why not follow their lead?

It wasn't that long ago that the dotcom boom busted, and the CIO-venture capitalist

relationship took a beating. But that relationship is rebounding: VCs want to hear CIOs' views to help investment decisions. CIOs, meanwhile, rely on venture investors

to help them keep up with innovative technology. So the CIO-VC gatherings are back on track, with an important qualification: Compared with 1999, it's much more difficult to get a startup's technology presentation in front of a CIO.

"If nothing else, VCs at least get you a friendly audience," says Emerick Woods, the CEO of CastBridge, a maker of data collaboration software. In Woods's case, it was Erik Lassila, managing director at Clearstone Venture Partners, who introduced CastBridge to Yahoo CIO Lars Rabbe. Rabbe got Woods a seat in front of 15 top execs at a recent CIO roundtable.

Talk these days at CIO roundtables is less

Continued on Page 26

The VC-CIO relationship is back on the mend after taking a beating during the dotcom bust.

The feedback led Harry Weller, a partner at the venture capital firm, to back an investment in FactoryWare, an Evanston, Ill.-based maker of software and hardware

relationship took a beating. But that relationship is rebounding: VCs want to hear CIOs' views to help investment decisions. CIOs, meanwhile, rely on venture investors

ARCHITECTURE

Look Out Below!

FRANK GEHRY'S BUILDINGS, like the fantastically curved, titanium-covered structure of the Guggenheim in Bilbao, Spain, are a marvel of free-form design and technological achievement. But cutting-edge architecture can't trump mother nature, as the occupants of Gehry's Peter B. Lewis building at Case Western Reserve University have learned.

In 1990, Frank O. Gehry & Associates of Santa Monica, Calif., first explored the use of computer-aided three-dimensional interactive application (CATIA)—engineering software used to design airplanes. CATIA plots Gehry's designs onto a geometric grid so that plasterers, metal fabricators

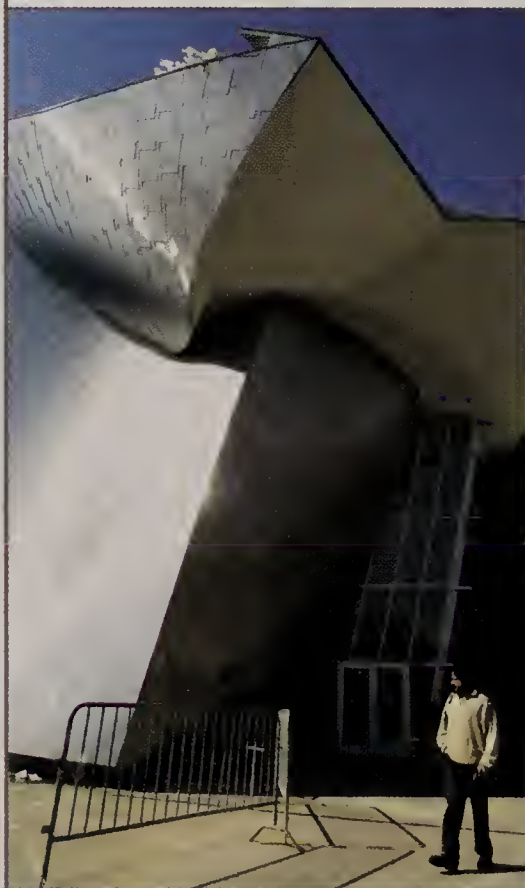
and stonecutters work with exact dimensions, making possible structures such as the Lewis building, a \$61.7 million, 152,000-square-foot behemoth that contains only four flat walls.

However, the steep slopes and waves in the Lewis building's roof have created more than just a visually arresting experience. Last winter, frigid Cleveland temperatures and more than 90 inches of snow created falling ice and snow hazards for students walking to class.

The university has erected barricades on some of the sidewalks, and Gene Matthews, director of plant services at Case Western, is working with Gehry's firm to identify some remedies to protect passersby while still preserving the building's unique design. Ideas: rooftop systems that melt the snow piles before they plummet to the sidewalks below, and diverters that would direct snow and ice runoff into special trenches. "It's contingent on finding a solution that doesn't interfere with the building's aesthetics—which is a challenge," says Matthews.

—Daintry Duffy

Last winter, Case Western Reserve University put up barriers to protect pedestrians from ice and snow falling from the Peter B. Lewis building.



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Venture Capitalists

Continued from Page 24

whizbang and more meat and potatoes: technologies that help a company become more efficient and competitive, and reduce total cost of ownership. And also issues such as getting more out of ERP, tapping business intelligence, controlling spam, enhancing security or standardizing corporate messaging.

But overall investment in startups is lagging, compared with previous years. Venture firms collectively today have an estimated \$84 billion in funds to invest. In the third quarter of 2003, venture companies invested \$3.9 billion in 429 different companies, a 3 percent dip from the second quarter, according to VentureOne, a capital market research house. Of those 429 deals, IT-related investments garnered more dollars than either health care or products and services, according to data from VentureOne and Ernst & Young. A different study of the same period drilled down among those IT deals and reported that \$1 billion in capital investments went to companies in Internet infrastructure startups. That study, by NetsEdge Research Group, noted that security was atop the list, followed by wireless mobility-related investments.

Bob Marshall, managing partner at Selby Venture Partners, says he is more likely today to ask CIOs to assess a new technology than to push them to try it.

"Enterprise software is such a tough market these days," he says. Selby has invested in just three software companies during the past year and a half, including patch management software maker BigFix. In August, document management giant Pitney Bowes agreed to be a BigFix customer—after meeting with a big contingent of IT staff, of course.

—Kim Girard

L A W S U I T S

Suit Alleges Health Risks of Wi-Fi

FIRST, CHILDREN living near power lines were at risk for leukemia. Then, cell phones were going to fry our brains. Now, wireless networks are harmful too?

Three families have sued a Cook County, Ill., school district, claiming that wireless local area networks installed in the district's 10 schools, which allow students to access the network from anywhere in a classroom, are subjecting their kids to prolonged exposure to low-level, high-frequency electromagnetic radiation, presenting substantial and serious risks to their health.

Just how harmful are wireless local area networks?

According to the Federal Communications Commission, evidence of the harmful biological effects of low-level radio frequency radiation has been "ambiguous." However, the FCC does admit that prolonged exposure to high levels of this radiation can result in the heating of human tissue and an increase in body temperature. This, in a nutshell, is how microwaves cook food.

Wi-Fi experts argue that while wireless networks do, in fact, produce low levels of electromagnetic radiation, they emit no more than household gadgets do. If wireless networks are hazardous to your health, they say, so then is nuking a slice of pizza. Microwave ovens and many cordless phones actually operate at the same 2.4GHz frequency used by a 802.11b wireless network. Even those wireless speakers you can buy at RadioShack emit similar radiation levels. "At this point, we have no reason to believe there is any harm in wireless networks," says Wi-Fi Alliance Managing Director Frank Hanzlik.

The school district in question, Oak Park Elementary School District #97, is standing behind its decision to use wireless technol-

ogy. In a statement, representatives said they spent two years researching the issue and listening to expert testimony. The district believes the technology, the same as that used in buildings around the world, is safe.

But plaintiffs in the Oak Park Elementary School District lawsuit claim they have more than 400 scientific articles outlining the health risks of low-intensity radio frequency radiation exposure. In their lawsuit they assert that "responsible scientists have reported that prolonged exposure to low-intensity radio frequency radiation can break down DNA strands, cause chromosome aberrations and break down the blood-brain barrier, thereby permitting toxic proteins to invade the brain."

They are scheduled to get their day in court this month.

—Julie Hanson



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By the Numbers

By Jon Surmacz

Beware: Switching Carriers Comes with Costs

ACCORDING TO Federal Communications Commission rule changes that went into effect Nov. 24, 2003, cell phone users may switch from one local carrier to another while maintaining their old phone numbers. For businesses, which compose 35 percent of the cell phone market in the United States, the rule

change represents an opportunity to bring all users under one carrier to take advantage of volume discounts and streamlined processes that could save up to 35 percent in wireless costs, according to Gartner. But there are hidden costs that may not make switching carriers worthwhile.

Based on a Gartner model of 1,000 users, here's what you can expect:

Here's Where You'll Spend

Capital costs	\$235,000
Operations	\$50,933
Administration	\$15,789
Training	\$15,110
Total spent	\$316,832

Here's Where You'll Save

Switching discounts	\$31,200
Lower costs per minute	\$216,000
Management consolidation	\$12,000
Total saved	\$259,200

Here's How It Adds Up (Or Doesn't)

Total spending - Total savings = **\$57,632**

So, switching leaves you more than \$50,000 in the red in the first year.

Gartner estimates that there will be **14 million to 15 million new cell phone subscribers** in 2004, raising the total U.S. wireless subscriber base to 172 million.

SOURCE: Gartner

Best Practices

Assess costs and benefits. Be prepared to move to another carrier, but be sure to assess dollar and time costs for switching. Will you be sacrificing coverage to save money? Is it worth the effort? Savings will vary, depending on the size of the deal. Also be aware of your contracts and the penalties for early termination.

Be patient. Unless you're in a hurry, it's best to wait this out. It may take several months for carriers to work out the kinks in their switching processes. Plan to consolidate in the second quarter of 2004 at the earliest.

Evaluate your contracts. Companies that currently use multiple carriers may have an easier time porting numbers from one carrier to another, as opposed to companies with one carrier looking to move all of their users to a new carrier.

Talk to your carrier. Tell your existing carrier that you're planning to take your business elsewhere. There could be last-ditch deals to be had.

Ask for service-level agreements. Don't switch without an SLA in place. Make sure it covers the time period for switching, accuracy, costs and penalties for not meeting deadlines.

Claim your numbers. Install a clause in the contract that the phone number is the property of the company—not the individual or the carrier.

Let the carrier do the switching. Don't get involved with the details. Leave the hassle to the operators.

Ask for progress reports. Keep an eye on all carriers involved in the switching process by demanding daily progress reports from each.



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LOCATION - BASED SYSTEMS

One in a Thousand

Radio tags can pinpoint containers at Long Beach, Calif., dockyard

RETAILERS ARE BEING promised big benefits with the use of small radio tags that can automate inventory and even customer checkout. Wal-Mart, for one, is pushing its suppliers to use these passive radio frequency identification, or RFID, tags, whose costs are heading toward a nickel apiece. Although bar-code labels cost only about a penny, the labor required to scan each box of cereal more than offsets RFID's price.

But there's another kind of radio tag that promises more benefits before products hit retailers: real-time location system (RTLS) tags. Unlike RFID tags that respond only when probed by a detection device, RTLS tags are reusable and they have a radio that transmits a signal every few minutes. RTLS tags can cost anywhere from \$20 to \$60, so their use is limited to pricier items such as cargo containers and automobile fleets. But they offer active location information that lets enterprises actively manage their assets, either within a fixed environment using wireless local area networks or over a wide territory using a global positioning system.

NYK Logistics, the U.S. division of Nippon Yusen Kaisha, a Japanese shipping conglomerate, is using them in its facility near



the Port of Long Beach, Calif., to find containers bound for rail and trucks.

NYK's facility works with 11 trucking companies, four drayage companies and a dozen shipping lines. Increased volume meant NYK had to drop its old system of having workers search the 70-acre yard manually, using bar-code scanners to confirm each container's identity before loading them onto the transports, says NYK Logistics General Manager Rick Pople.

A container that has a bar code "still has to be married to a location, which still involves driving around to see where they are," Pople says. "And if a hostler doesn't follow instructions properly, location information will be wrong, complicating the movement of containers."

RTLS tags were the answer. Each container gets one as it enters the yard. The active wireless tag (the size of a small pager) transmits a signal every two minutes, though that frequency can be changed. A set of 35 access points monitors its signal, using triangulation to determine location among the 700 containers and 300 trailers that are in the yard daily. The system also sends pickup instructions to wireless devices

NYK Logistics is using wireless real-time location tags to track specific containers shipped to the Port at Long Beach, Calif.

mounted in six tractors in the yard.

Tying together the 802.11b network and the RTLS tags is a yard-management software system combined with a network and communications package from WhereNet, which also provides the wireless tags and access points that handle both the 802.11b signals and the tag signals. The locating access points have a range of 700 feet to 1,000 feet outdoors, and 200 feet to 300 feet indoors. Their batteries typically last five to seven years.

Pople says he expects ROI within a year on an investment of between \$700,000 and \$1 million, not much more than a bar-code system, which requires more labor.

"RTLS is definitely a huge savings in terms of manpower," says Edward Rerisi, research director at Allied Business Intelligence, a technology research think tank. "Hopefully, it empowers the facility to make better use of its existing labor pool."

—Galen Gruman

IT a Jobs Issue on the Docks

LABOR ISSUES can be touchy in the logistics business. In September 2002, dockworkers went on strike across 29 West Coast ports. Unions wanted a say in how IT that was displacing workers would be introduced into the dockyards. (Read past coverage at www.cio.com/printlinks.)

Real-time location system, or RTLS, tags can be a win-win by improving efficiency and freeing up workers to spend more time on security screening and other terrorism prevention, industry observers say. Port managers, however, will still need labor union buy-in.

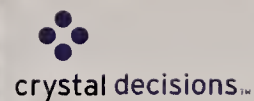
—G.G.

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Washington Watch

Edited by Elana Varon

Tech Could Tip Scales in Washington Senate Race

Pro-Microsoft Murray expected to face conservative challenger

WITH TROOPS STILL IN IRAQ and seniors puzzling over the future of their Medicare coverage, technology issues aren't a top political concern even in Microsoft's home state of Washington. Yet IT could sway the vote in the looming election battle between two-term Sen. Patty Murray, a Democrat, and her likely Republican challenger, Rep. George Nethercutt Jr.

Washington lost more than 10,000 IT jobs in 2002, according to the Washington Alliance of Technology Workers, also known as WashTech, a technology worker union. And, says Bryan Jones, director of the Center for American Politics and Public Policy at the University of Washington, Murray could try to score points with voters by highlighting her pro-tech record. Others, like Lew McMurran, public and governmental affairs director with the local trade group WSA (formerly Washington Software Alliance), contend Murray's technology experience offers no advantages.

Republicans are targeting Murray because they believe she is vulnerable to an aggressive, pro-business campaign, according to many political observers. Nethercutt, who is from Spokane in the eastern part of the state, became an instant GOP star when he unseated then-House Speaker Tom Foley in 1994, the year the Republicans recaptured the majority in the House. He was recruited by the White House to run for the Senate this year after Republican Rep. Jennifer Dunn, who, like Murray, is from the Seattle area, declined to run. Although Nethercutt may face a primary challenge in

September for the GOP nomination, he is expected to run against Murray in November.

Nethercutt's district is home to companies in such industries as the military, health care and manufacturing. Although he has backed pro-IT legislation, including free-trade policies that would help software exports, he is better known for working to obtain funding for the war in Iraq as well as budgeting for new jet-refueling tankers built by Boeing. The tankers would be deployed at Fairchild Air Force Base near Spokane.

Murray, who's worked to loosen restrictions on encryption exports and to provide



Sen. Patty Murray

Rep. George Nethercutt Jr.

money for technology training for teachers, emerged as a chief defender of Microsoft during the U.S. Department of Justice's antitrust case against the company. Employees of the software giant have shown their appreciation to the tune of \$33,802 toward her reelection, according to federal election data compiled by OpenSecrets.org, which reports on campaign contributions. Nethercutt has so far received just \$5,000 from supporters at Microsoft.

—Grant Gross

Nanotech Gets Commercialization Push

Federal funding would take emerging science out of lab

LEGISLATION SIGNED BY President Bush in December 2003 created a new unit of the National Science Foundation to coordinate nanotechnology research, and authorized \$3.7 billion during the next four years to fund commercialization of this largely experimental technology.

Nanotechnology is the ability to manipulate individual atoms and molecules to create new substances and change the properties of existing ones (the term itself refers to both the new products and the technology used to produce them). In IT, nanotechnology may enable such breakthroughs as computers with unlimited processing power. Toward that end, IBM has announced that it used nanotechnology to create silicon chips with memory cells 1/100th the size of the cells currently in use.

However, these early nanotechnology projects cannot be commercialized because there's no equipment for mass production. The government will be able to help by coordinating and funding the development of commercial production capacity, says Mark Modzelewski, founder and executive director of The NanoBusiness Alliance.

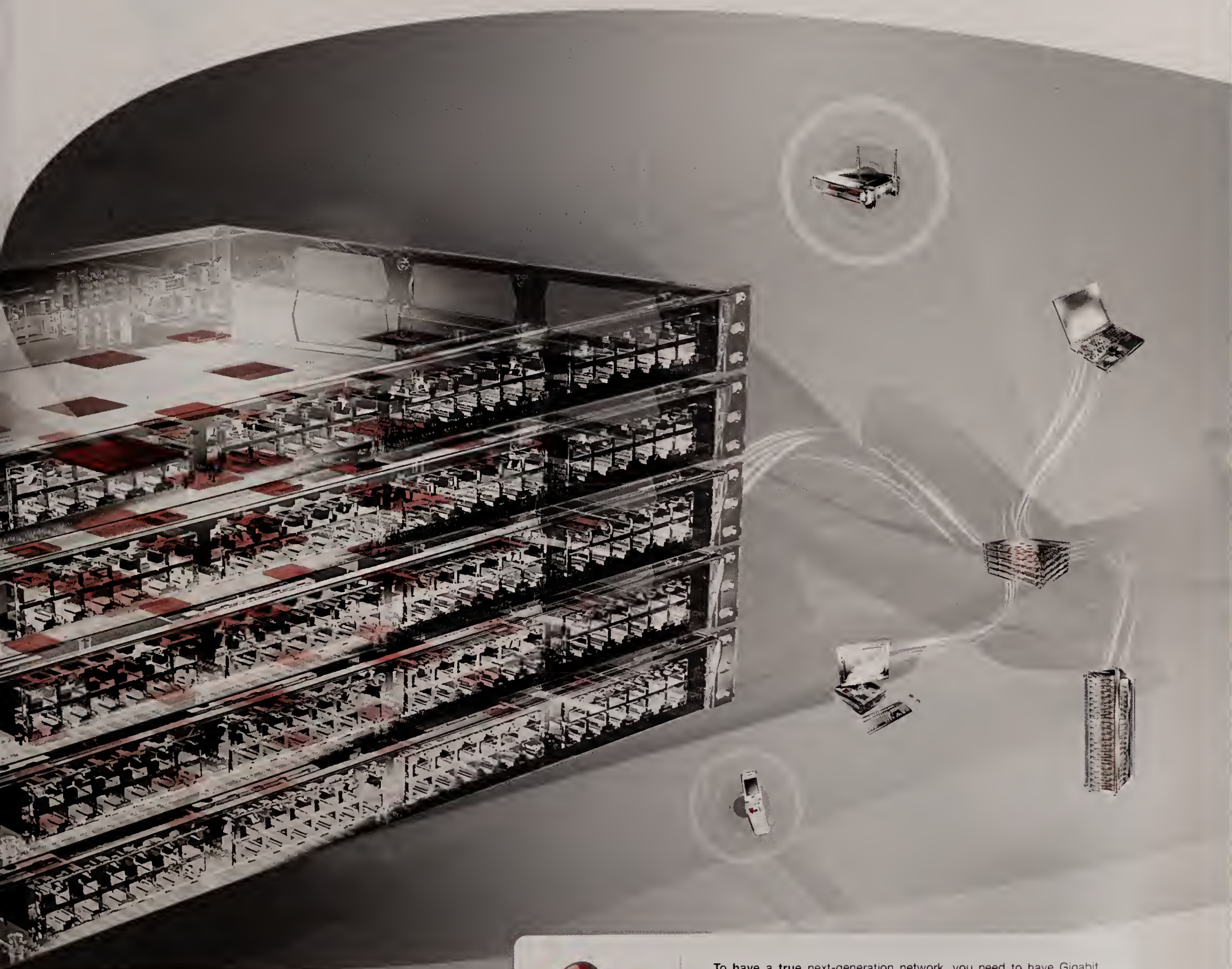
While most IT-related nanoproducts are still years away, Rohit Shukla, president and CEO of Larta, a nanotechnology think tank, says it's important for CIOs to start thinking about how to take advantage of its potential. But contemplating nanotechnology's impact on anything is a tall order. To get started, check out the government's nanotechnology website at www.nano.gov.

—Ben Worthen

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Source: ¹ IDC, Network Overview August, 2003

I . T . S E R V I C E S

High-End Therapy for PC Phobics

YOU MIGHT THINK that in 2004 it's unlikely—if not impossible—for a CEO or CFO to have reached the executive suite without much fluency in the ways of Windows and PCs.

You'd be wrong.

Meet Jennifer Shaheen, the entrepreneur behind Technology Therapy, an often-clandestine service for the high and mighty to learn the lowdown about desktop productivity tools.

Technology Therapy is similar to the one-on-one tutoring that the *Dummies* books provide to novices. Over the phone and in person, Shaheen, 29, founder and president of E-BusinessCreations, the company behind the service, guides powerful clients through whatever IT issues they can't solve on their own. The sessions are as cathartic as they are didactic, hence the therapy moniker. "These people are admitting and sharing ignorance and insecurity on the highest levels," she says. "The meetings are very private, much like you'd find in a psychology counseling session."

Shaheen says her clients place a big value on the privacy her service ensures. Many aren't comfortable turning to IT folks at their organizations because they are afraid of revealing a weakness, she says, adding that some of her clients also blame doting secretaries, who handle e-mail and all other computer chores, as the reason why they haven't learned PC basics.

For \$160 an hour, Shaheen delivers tech support over the phone—a personal help desk, if you will. For \$250 an hour, she makes house calls and delivers computer lessons after-hours in the privacy of an executive's office. And for upward of \$1,750, Shaheen says she'll spend one full workday on site, instructing clients on the ins and outs of anything from iPacs to tablets, and Palm devices to the latest Windows software.

"When we got a new PC system, it would have taken us weeks without [Shaheen's] help," says Mike Brenner, an IT executive recruiter at Brenner Executive Resources in New York City. Brenner possessed rudimentary PC skills but knew he needed to learn more. "She taught in one lesson what would have taken me hours to figure out on my own, and that makes my life easier."

Making life easier. Freud (if he were still alive today and conversant in Windows) would probably click his mouse on an "OK" button at that idea.

—Matt Villano



"Effective people do not make a great many decisions. They try to make the few important decisions on the highest level of conceptual understanding. They try to find the constants in a situation. They are, therefore, not overly impressed by speed in decision making. They want impact rather than technique; they want to be sound rather than clever."

—Peter Drucker, from *The Effective Executive* (1966)

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Six Things You Want from Your Technology Vendors

WE CAN ALL SPEAK volumes about what high-tech salespeople do wrong. But in the spirit of vendor relationship building, we asked members of the Best Practice Exchange to tell us what their favorite salespeople do right. Specifically, we asked them to name what they want from IT vendors. Tear out this page and show it to those vendors who could use a little improvement.

1 DON'T RUSH ME. Salespeople who push too hard will lose out in the long run. "A good salesperson needs to respect my time," says Jim Sloane, VP of IT at flooring company Mannington Mills. "They shouldn't try to push for a contract prematurely. They need to respect the fact that I have to consider alternative solutions." Sherry Rubin, CIO of Philadelphia Gas Works, puts it another way: "Don't assume a relationship with me before we really have one."

2 TELL IT TO ME STRAIGHT. "I expect a top salesperson to talk to me about what business problem their technology will help me solve, why their solution is the best alternative and what the downsides to their solution are," says Randy Krotowski, CIO of ChevronTexaco Latin America Products Co. "I don't want any surprises later. I want the same kind of dialogue I'll be having with my CEO when I go to discuss why the investment makes sense."

3 BE CREATIVE. The salesman who breaks the mold will win the business. "Our best

salespeople get creative," says Tama Olver, VP and CIO of life sciences company Applera. "They have the ability to construct 'win-win' options and to create offerings that we did not think to request." Remember, one size does not fit all.

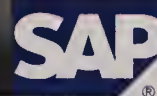
4 IF YOU DON'T HAVE IT, DON'T SELL IT. While the phrase "I don't think we have what you need" is anathema to most high-tech salespeople, it might be one worth learning, say CIOs. As Bill Haser, CIO of Tenneco Automotive, advises, "Understand my business well enough not to waste my time with new products or features that will not add value in my environments."

5 LOOK PAST YOUR QUARTERLY NUMBERS. A valuable salesman needs to pay more attention to the long-term relationship with an organization, not Wall Street's quarterly projections. As Steven Steinbrecher, retired CIO of Contra County, puts it, "I hate it when a sales rep comes in on the 20th of December and tells me, 'Hey, if you buy this product by

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the end of the year, I can shave X dollars off the price.' That person gets ushered out my door as soon as possible, never to get past my executive assistant again!"

6 STICK AROUND. Selling high-priced IT solutions is not a hit-and-run proposition. The best in the business stay to manage the details after a sale has been made. "Good salespeople follow up after the deal is signed

to make sure the administrative details are managed properly," says the VP of IT at a major industrial manufacturing company who wished to remain anonymous. "Especially with telecom services, getting the contract and pricing terms implemented so that the rates actually show up on the bill is a major undertaking. Too often the salesperson gets the order and disappears."

Must-Reads from the Exchange

The printed word is alive and well in the Best Practice Exchange. In honor of this issue's CIO Enterprise Value Awards, we've compiled a member-recommended list of books and articles on running world-class IT. Reading a couple of these just might propel you into the winner's circle next year.

Good to Great, by Jim Collins

"An excellent guide for building a great IT organization."

—EVAN STEWART, CIO, B/E AEROSPACE

The Servant, by James C. Hunter

This book "makes you analyze what is important in leading the IT organization."

—EVAN STEWART, CIO, B/E AEROSPACE

Golf Is Not a Game of Perfect, by Bob Rotella with Bob Cullen

"Though it is not an IT book, it contains insightful information that can be applied to IT. It focuses on the 'vision thing'—the premise that you need to set difficult tasks to achieve goals and then dedicate yourself to getting there, and you need to recognize that there will be setbacks. In the end, IT is not a process of perfect."

—JAMES M. RIIS, CIO,
BAYVIEW FINANCIAL TRADING GROUP

"Management Time: Who's Got the Monkey?"

by William Oncken and Donald L. Wass,
Harvard Business Review, February 2000

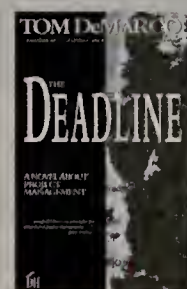
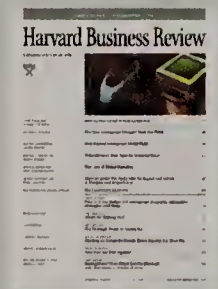
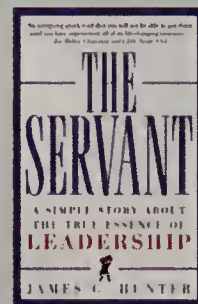
"A failure to delegate is a huge time-waster for IT leaders, and it's a hard skill to learn for someone with a technical background. 'Management Time' is an absolutely fabulous article on the subject."

—PAUL INGEVALDSON, SVP OF INTERNATIONAL AND TECHNOLOGY,
ACE HARDWARE

The Deadline, by Tom DeMarco

"For a little light reading, try this novel about project management."

GENE ELIAS, VP OF IT, QUIKSILVER



PEERCOUNSEL

» The Database Administrator Role Evolves

Q: I am seeing a blurring of roles between the traditional database administrator (DBA) and the application developer. My DBAs are writing more code, and my developers feel like the DBAs are pushing back when they should be doing the traditional DBA job. Is the DBA role becoming less specialized and moving into a developer role? Are you doing anything about it?

—VP OF IS, ELECTRONICS COMPANY

A: We have a developer who is a half-time DBA. She takes the lead on the platform work and collaborates with the other developers when they have specific needs that require both perspectives. I'm sure a lot of the traditional DBA work is done by our developers. Tools are getting better at the lower-level work, so people can focus on solving the business problem.

—JIM PREVO, VP AND CIO,
GREEN MOUNTAIN COFFEE ROASTERS

A: We have taken our two DBAs and moved them into developer roles. They have reacted positively, and the development team has benefited from having people familiar with our databases and servers to create EDI and data warehouse-related applications.

—FARID NAGJI, SVP AND CIO, HCC SERVICE

A: This blurring of roles is a dangerous, but necessary, evolution toward a more data-oriented environment. I see an analogy between this and the proliferation of Web developers who know nothing about formal software development methodologies. If not managed closely, allowing developers with no DBA skills to meddle with the inner-workings of databases and data marts could be disastrous.

—DAVID REID, CIO, THE KRYSTAL CO.

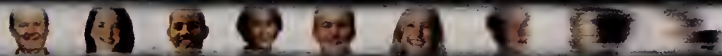
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How to Read the Signs

What you can do to lead your organization down the path of technological change

IN A RECENT ARTICLE in *Harvard Business Review*, business strategy guru Gary Hamel wrote, “The world is becoming turbulent faster than organizations are becoming resilient.” Since organizations are collections of people, then individuals are feeling this same disorientation from the high-change world—which, I might add, is here to stay. The technological change that occurred slowly over centuries (such as the invention of the wheel) accelerated to change measured in decades (the impact of the automobile, for instance), which has now been transformed into continuous and pervasive change brought on by the computer chip.

The implications for individuals in general, and leaders in particular, can be either debilitating or energizing, depending on your aperture. Use a narrow day-to-day lens, and the winding path of change will disorient you. Widen the aperture to a few years, and you’ll see patterns forming out of the changing landscape. These patterns out of chaos will give you both great insight and confidence to either stay or change the course.

Consider, for example, the dotcom craze. In the late ’90s, anyone who didn’t buy in just didn’t understand. By 2001, it



seemed obvious that everyone who had bought in just didn’t “get it.” In retrospect, although the business models were wrong and overheated very quickly, the long-term principles of e-commerce (consumer choice, self-service and extended, real-time supply chains) were right. The technology innovation spawned during the first dotcom boom set the stage for true e-business transformation, which will take place during the next decade.

It’s important for all leaders to step back and recognize the patterns in change and factor out the noise—but it’s even more critical for CIOs to do so. CIOs have a bifurcated agenda, because at the same time that we’re dealing with the rapid pace of technological change, we are also shaping technology.

There are three major competencies that great IT leaders need in order to get the lay of the changing landscape: pattern recognition, technical savvy and street smarts. Put another way,

A black and white photograph of a person rock climbing a steep, textured cliff face. The climber is wearing a light-colored t-shirt, shorts, and a climbing harness, and is secured by a rope. The background shows a vast, open landscape with a valley and distant hills under a clear sky.

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if you want to be a great IT leader, these are three talents you need to hone.

Pattern Recognition The ability to sit back and watch the horizon instead of concentrating on the “hood ornament” will keep you going in the right direction. The faster the speed and the more winding the road, the more this principle is true. Unfortunately, the demands of business make most executives pay attention not just to the hood ornament but also to the fly on the windshield.

In truth, both perspectives are important. You need to narrow the aperture and broaden it at the same time. It's a contradiction, but it must be managed. For example, a one-hour

is being created by customers and employees doing more self-service and suppliers being integrated into networks and processes. These multiple players create capacity peaks and unpredictability. The changes in demand make it mandatory that you are “always on” and have backup capacity.

Being technically savvy doesn't mean that you have to be the best technician in your organization. For most CIOs, that would be impossible, in fact. What you need is an understanding of the basics—to know what's real and what's marketing, what's hard and what's easy, and what's here now and what's not. You also have to know enough to know who (on your staff or in the marketplace) knows the topics versus who knows the words and slogans.

Street Smarts The final competency required for IT leaders to get the lay of the land is street smarts—that is, understanding how things really work, not just how they look on an org chart. This isn't politics—that implies manipulation. Street smarts is pattern recognition about people and organizations. You have to understand how decisions get made: who the influencers, the experts and the “blockers” are; and who will tell you what you want to hear versus what you need to know.

Make no mistake: You can have the widest aperture vision with great business and technical insights, but if you fail to understand the organization as a whole, you will never sell or implement your agenda. Consider, for example, how you interact with the procurement office. It is charged with getting low-cost, leveraged buying. That mandate can be a great ally or a formidable enemy to your agenda. For example, you might be focused on the total cost of ownership (TCO) of IT assets, which implies a program of simplification and quality management. The procurement office will naturally focus on the per-unit cost of a purchasing transaction. Your ability to educate procurement about TCO is critical to your overall success. Having the group work with you rather than against you is what I mean by street smart. You can rely on the formal power of your position from time to time, but it's much more effective to use your influencing skills.

If you can develop all three of these competencies, you're on your way toward setting the corporate IT agenda. Execution will then become key. My next columns will address the high-level IT leadership skills of building a great team and having an impact. **CIO**

Where should CIOs focus their energy? On the immediate crisis? Or on the longer-horizon analysis of technological change? Good IT executives are usually good at one or the other. Great IT executives are good at both.

network outage can create havoc if not handled properly. Yet understanding where networks are going in the future may be the difference between your company or your major competitor winning in the marketplace.

Where should CIOs focus their energy? On the immediate crisis—handling the network outage that has everyone screaming? Or on the longer-horizon issue—the time-consuming analysis of technological change? Good IT executives are usually good at one perspective or the other. Great IT executives are good at both. CIOs must surround themselves with people and partners who can help scope out a complex operating problem and then zoom in to connect the dots.

Technical Savvy To develop pattern recognition skills, you have to remain technically competent. For the past few decades, companies have reversed their thinking about the type of CIO they want to hire. Recruiters have gone from looking for strong technical skills with limited business acumen to seeking strong business skills with limited technical acumen.

The trade-off that's assumed in these trends is problematic and unnecessary. In both business and technology, there are long-range patterns that must be recognized, assimilated and articulated. But at the same time, significant details must be understood and managed.

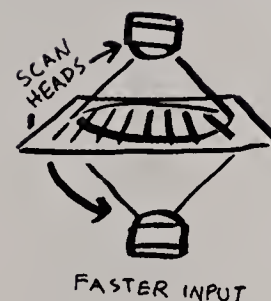
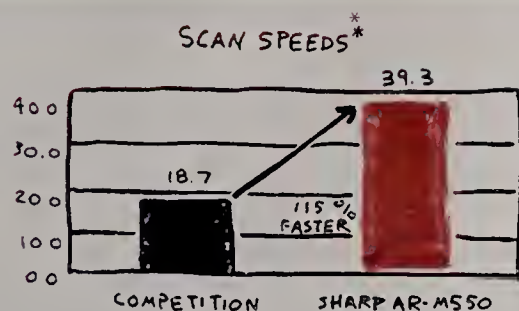
For example, when considering utility computing, it is just as important to know that it's an evolving technology as it is to understand the business need for surge capacity. This demand

Charlie Feld is the former CIO for Frito-Lay, Delta Air Lines and Burlington Northern Santa Fe Railway. He is CEO of the Feld Group, a CIO consultancy based in Irving, Texas, which was acquired by EDS in January. He can be reached at charlie.feld@feldgroup.com.



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Michael Schrage | Making IT Work

It's All About the Execution

The Metrics Trap

Too many CIOs judge implementations by measuring the technical capacity of a project, instead of considering how it has improved their companies' business

AS AN AMBITIOUS young computer science and economics major who desperately wanted to be a writer, I got very good at being taken out for lunch by editors. I did my homework, I studied the magazines, and during the meal I never failed to ask my host, "So, what's the biggest problem you have with your freelance writers?" (The idea was to assure them I would never repeat such a mistake.) Without exception, the editor would lean back, sigh, shake his head and say, "The biggest problem we have with our writers is that they write too long. We always end up having to make cuts."

Note to self: *Don't write long!*

Coffee and dessert finally arrive. The conversation has gone well. Now comes the moment where I ask The Big Question: "So, umm, how much do you actually pay?" Without exception, my editor would lean forward, nod and say, "Oh, about a dollar a word."

Duh. Dollar-a-word/Writes-too-long. Tomayto/Tomahto. I was shocked by how these editors were oblivious to the obvious connection. But why pick on editors? I found the same perverse dynamic when I was chatting with a group of CIOs



at an MIT dinner.

In recent years, how have most IT organizations measured—and rewarded—programmer productivity? LOCs—lines of code—per unit time. And then we're surprised that we end up with bloated, inefficient and poorly documented systems? Who are we kidding?

Perverse metrics linked to perverse incentives always lead to perverse results. That is an iron law of human nature and economics. Want to know the secret to successful implementations? Define what a "successful implementation" is and have the courage to ask: Is this a definition that creates perverse incentives? Or is this a definition that leads to metrics we can meaningfully recognize and reward?

Today's IT is awash in metrics that misalign expectations, processes, rewards and outcomes. Too many CIOs spend too much time defining what IT and the business are trying to do

ILLUSTRATION BY JAMES O'BRIEN

EnterpriseLeadership

IT STRATEGIES FOR DELIVERING BUSINESS VALUE

Business Service Management Insights for Implementation

Lee Adams,
VP of infrastructure
services at HCA,
has just launched a
BSM initiative.

Also Inside:

CIO Jay Gardner on
BSM at BMC

Overcoming the
Obstacles to Alignment

BMC Software
President and CEO
Bob Beauchamp on
Enterprise Leadership

Why Alignment
Should Top
Your Agenda

Your
Business. Your
Technology.
Your Job.

SPECIAL REPORT
Examining New
Trends, Tools and
Tips for Getting
IT in Synch With
the Business

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A systematic approach helps bring business and IT together to achieve Business Service Management—an inside look at BMC Software's dynamic new alignment strategy and services. *by Jim Grant*

12 ONE SMALL STEP FOR HCA—ONE GIANT LEAP TOWARD BUSINESS AND IT ALIGNMENT

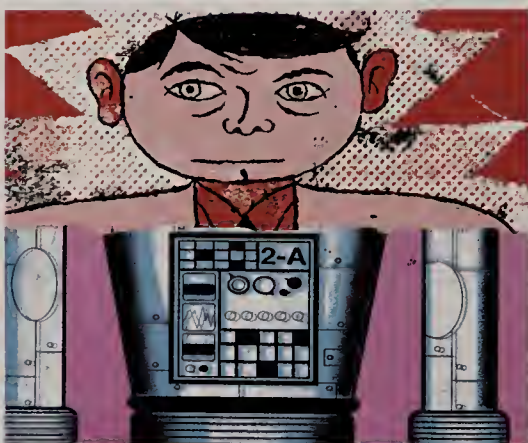
A profile of HCA, whose IT leader has embarked on a mission to deploy Business Service Management. *by Meg Mitchell Moore*

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Cover photograph by Wolf Hoffman



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GREETINGS

a new magazine for a new world of IT leadership

WELCOME TO the inaugural edition of *Enterprise Leadership*, the new magazine from BMC Software.

Enterprise Leadership has a single, highly focused editorial mission. We aim to help IT leaders like you deal with perhaps the most pressing problem currently facing IT, the alignment of today's heterogeneous IT landscapes with business strategy, goals and objectives.

Every day, our customers cope with an increasingly complex IT environment. At the same time, working with fewer resources, the executive team is holding IT increasingly accountable for lowering total cost of ownership, demonstrating ROI and making a direct contribution to the corporate bottom line.

As a result, it is no longer enough to make sure that your systems are running efficiently, users are satisfied, and your backup and disaster plans are in place. You must also ensure that IT is aligned with business objectives. This is what we hear consistently from customers both large and small: "There are no IT projects anymore—just business projects supported by technology."

To learn more about Business Service Management, visit our BSM resource center at www.bmc.com/el/bsm.

This is not exactly a new idea. Many CEOs tell me that alignment is a goal they have pursued for some time. However, achieving it is often like trying to hit a moving target.

So what do you do? How do you shift emphasis from managing infrastructure—making sure all the technical components work—to managing business-critical services from both IT and business perspectives?

Helping you answer these questions is a primary objective of *Enterprise Leadership*. The magazine is one of the ways that we can share BMC Software's extensive experience in providing senior management with solutions that encompass data, infrastructure, applications, performance and service management. You will learn how our customers and business partners are dealing with these challenges, and what industry experts have

to say about navigating the inevitable pitfalls that lie ahead.

For example, the lead article in this first issue, "The New Imperative," takes a comprehensive look at the market forces driving and evolving Business Service Management (BSM). In today's enterprise, the move toward BSM is a compelling management imperative. We can guarantee you'll hear a lot more about this discipline from industry experts, analysts, the trade and business press, and your colleagues in the months and years ahead.

Aligning IT and business is an unfolding strategy. In upcoming issues of *Enterprise Leadership*, we'll chart those changes, report on how your colleagues are meeting their alignment challenges and provide practical information you can use on a daily basis.

I hope you'll find *Enterprise Leadership* engaging, useful and thought-provoking.

To ensure this magazine fits your own needs, I'd like your feedback. You can reach me at bbeauchamp@bmc.com. The evolution of IT and *Enterprise Leadership* magazine is a journey we can take together.

Bob Beauchamp
President and CEO
BMC Software, Inc.



SPECIAL REPORT

By **Steve Ulfelder** Photographs by Charles Ford

the new imperat

▼ TALKING POINTS

HARTE-HANKS INC. IS FIGHTING an outbreak of intranets. For a few years there, it seemed every business unit, department and geographical office within the \$900 million San Antonio-based company wanted to launch its own intranet.

“But we’ve decided to centralize all these intranets,” says Dave Lagreca, CIO of the direct and targeted marketing company. “We can still leverage the specialized pieces for individual units, but where appropriate, we can use the single intranet across the organization.”

Business/IT Alignment Trends

As the economy drives tighter IT spending and competition tightly binds business processes to technology, the case for business/IT alignment becomes even more compelling. Consider the following:

Concepts such as Business Service Management, Balanced Scorecard and Business Activity Management are gaining ground in the IT organization as important alignment tools.

IT leaders and business executives are creating new methods of communication as they learn to correlate technology projects with business initiatives.

The intranet conundrum is familiar, but the way it came to the attention of senior management is unusual. Each Harte-Hanks operating unit files a quarterly “statement of IT integrity,” a set of best practices that ensures it is meeting standards

A round analog clock with a black frame and white face, showing the time as approximately 10:10. It is mounted on a wall.

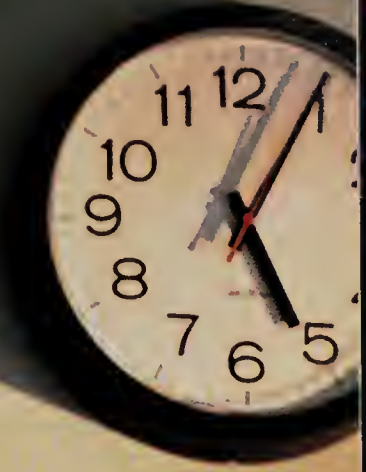
 **Austin**

A round analog clock with a black frame and white face, showing the time as approximately 10:10. It is mounted on a wall.

 **Boston/
Philadelphia**

A round analog clock with a black frame and white face, showing the time as approximately 10:10. It is mounted on a wall.

 **Belgium**

A round analog clock with a black frame and white face, showing the time as approximately 10:10. It is mounted on a wall.

 **Singapore**

ive

People have been talking about business/IT alignment for years. Now they're finally doing something about it.

DAVE LAGRECA,
CIO of Harte-Hanks
Inc., partners with
his CFO to review IT
project proposals
and find those that
will deliver the most
business value.

SPECIAL REPORT

on disaster recovery, software development and other IT disciplines. In order to win funding for new IT projects, the units must pitch them in the proposals, which are reviewed by Lagreca and the CFO's office. The goal is to spot cases in which units are duplicating each other or creating solutions that could help the company as a whole compete. This is one way Harte-Hanks executives ensure better business/IT alignment.

Aligning technology investment with business priorities is a clear focus for many CIOs. In annual Gartner Inc. surveys, aligning IT with business strategy has topped CIOs' management concerns every year since 1996.

The urgency is growing. What's driving this is the long-term economic downturn, which has spurred enterprises to closely track every budget dollar. And who can blame them, after the excess IT spending of the '90s?

Corporate officers and line-of-business managers are more knowledgeable and demanding now, also. "Newer business processes are tightly intertwined with IT," says Gartner analyst Debra Curtis. "As a result, business managers are no longer willing to have that portion of the budget be a black hole. They aren't willing to be ignorant [about IT] anymore." A vital part of the CIO's job is now translating techno-speak into a language suitable for businesspeople. The reverse translation is just as important and perhaps even tougher: business managers must be able to express their strategies and priorities to technologists.

BRIDGING THE IT/BUSINESS CHASM

With so many uncontrollable forces pushing technology and business strategy together, the forces keeping them apart must be powerful indeed. Budget is one.

A vital part of the CIO's job is now translating techno-speak into a language suitable for businesspeople.

On average, IT organizations devote 70 to 80 percent of their funding to existing operations, leaving scant discretionary funding for other projects—especially those that may appear to offer "soft," hard-to-quantify benefits.

But budget alone can't be the culprit, or the alignment gap would have been closed during the flush mid-1990s. The biggest impediment is human nature, according to Telle Whitney. As a 20-year IT industry veteran and president of the Institute for Women and Technology, Whitney has seen technology operations large and small. She believes alignment problems start at the top. Depending on their background, CEOs are typically more aligned with either the technologists or the business and marketing people, but rarely have the skills or the impetus to bring the two parties together, Whitney observes.

Too often, success has been random. "It's usually a case of having one or two exceptional people on the technology side who could communicate with the business side," says John White, CEO of the Association for Computing Machinery (ACM), a venerable industry group. "But those people, they are few and far between."

The e-commerce revolution has begun to build a bridge over that canyon. At the very least, companies now grasp the importance of alignment, and most are now actively working to achieve it. Nevertheless, good intentions sometimes do little good. Projects still slip under the radar, or in through the back door—without first tracking to business objectives.

To avoid those inconsistencies, large businesses are now looking to strategies that will enable them to align IT and business goals in a repeatable, quantifiable fashion. Here's a look at some of the approaches businesses are using.

Balanced Scorecard This may be the most popular IT methodology (Gartner says that 400 of the Fortune 1000 companies are probably using it). Its goal is to help businesses translate their larger business strategies into discrete, well-quantified goals and then track performance in achieving those goals.

While Balanced Scorecard is generally admired, it's not perfect. As with any methodology, results depend largely on implementation, and some researchers believe that different departments within a company tend to implement Balanced Scorecard with varying levels of precision. This makes it difficult to apply across the enterprise.

BAM Business Activity Monitoring (BAM), a term coined by Gartner, aims to provide real-time access to critical performance indicators to improve operations.

Think of BAM as a feature built into various tech-

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The Balanced Scorecard Collaborative was founded by Robert S. Kaplan and David P. Norton, the creators of the methodology:
www.bscoll.com

For more information on BAM, visit Gartner Inc., which coined the term:
www.gartner.com

You can find extensive BSM resources at BMC Software:
www.bmc.com/el/bsm

This CIO magazine column explains the application of portfolio management to IT: www.cio.com/analyst/012502_giga.html



Dave Lagreca, CIO of Harte-Hanks Inc., puts alignment at the top of his agenda.

nology disciplines: business intelligence, data warehouses, rules engines, business process management, network systems management and even enterprise software applications. “Previously, apps didn’t know about other apps,” says David McCoy, a research vice president and fellow at Gartner. “The cool thing about BAM is that all these applications become a connected mesh.”

Service Level Management (SLM) This is a set of procedures intended to ensure that all IT users receive adequate service, in accordance with business priorities and at acceptable cost. With SLM, the goal is to meticulously define user needs and then track how well the provider (the internal IT group or an external service provider) meets those needs.

The discipline has several benefits. First, effective SLM requires clear communication between business users and IT. SLM also helps set user expectations about what IT can and cannot provide, and at what cost. Moreover, the service-level agreements that form the foundation of SLM can help enterprises control IT costs by clearly defining which areas need upgrading and which are reasonable—focusing IT spending where it’s needed most.

Business Service Management (BSM) This approach helps improve IT/business alignment by correlating technology components—servers, software, the network and so on—with business initiatives. The goal: A standard way to discuss how the business can maximize its IT investment, and how IT can best serve

business needs.

Key BSM components are:

PROCESS-ORIENTED MANAGEMENT. A typical business service might rely on multiple servers and software applications. BSM lets businesses monitor and manage these components as a whole, rather than as discrete, complicated technology elements.

USER EXPERIENCE-BASED MANAGEMENT. End user productivity and satisfaction with a service play a pivotal role in the effectiveness of that service, but too often goes unmeasured. With BSM, user experience is an important metric.

SERVICE LEVEL MANAGEMENT. BSM tools define service levels, define and map the elements and processes required to deliver those service levels, and then measure compliance.

According to Gartner’s Curtis, successful BSM implementations also bring other benefits. For example, when an IT shop focuses on solving problems deemed high priority by business managers (such as a network that bogs down at a certain time each day, slowing e-mail transmission), worker productivity

rises. BSM also tends to increase users’ trust and respect for IT, as they gain a deeper understanding of its functions and services.

While virtually all companies can benefit from BSM or other alignment strategies, some will find a steeper learning curve than others. “IT organizations that already [have in place] end-to-end service level agreements will find it easier to implement BSM,” Curtis says. Thorough change-management processes also speed implementation; in general, the more mature an enterprise’s IT processes are, the easier it will be to link those processes to business strategy.

RESULTS AND NEXT STEPS

The strategies above can help enterprises address the business and technology alignment gap, but other efforts are also progressing. More universities are offering technology-focused MBAs to equip business managers with an understanding of IT. “As technology becomes more basic to the function of all businesses, I think businesses are embracing technologists as partners who can help develop strategies to reshape the enterprise,” says Harte-Hanks’ Lagreca.

The ACM is partnering with industry to fight the popular perception of technologists as disengaged from business concerns, according to its CEO John White: “When we talk with CEOs and CTOs of major companies...they know that what you need to make business work today is to get these two sides together to co-produce a vision.” ★

SPECIAL REPORT

A systematic approach helps bring business and IT together to achieve Business Service Management

By Jim Grant

Illustration by Christian Northeast

overcoming the obstacles to alignment

▼ TALKING POINTS

Business Service Management (BSM) solutions enable you to change the way you do business—beyond simply managing your IT infrastructure. BSM solutions help you manage IT from a business perspective, so you can bridge the gap between IT and business. Find out more about the IT/Business Alignment cycle and BSM at www.bmc.com/el/bsm.

TRADITIONALLY, ensuring IT alignment with the business has been the CIO's job. In fact, a recent *CIO* magazine poll of 500

CIOs indicates that more than one-fourth of their time is spent communicating with other business executives. Successful IT/business alignment entails more than executive-level communication and strategy translation, however, and the challenges at times seem insurmountable. CIOs frustrated by their alignment efforts have often encountered difficulties that seem beyond their control, according to a recent report by Giga Information Group.¹ The Giga study,



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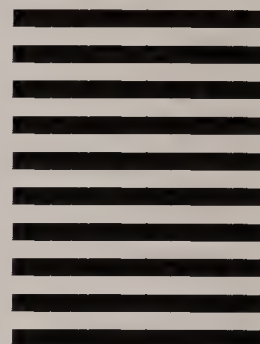


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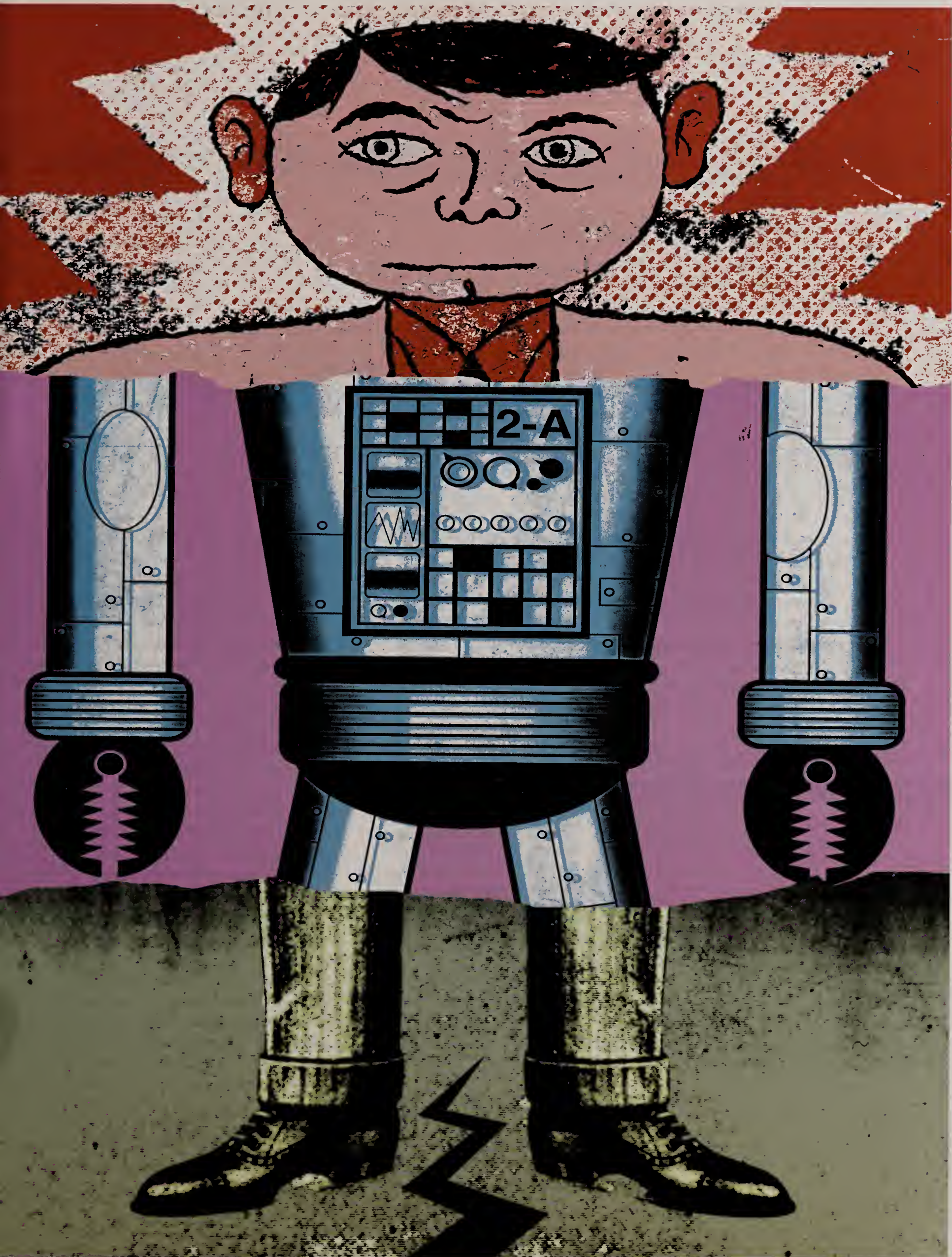
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SPECIAL REPORT

summarized in the table below, lists obstacles that inhibit alignment and the factors that differentiate the successfully aligned IT organization from the non-aligned organization.

Fortunately, the hardships aren't always beyond the control of IT. CIOs who have successfully aligned their IT organizations with business have typically done so by establishing process improvement programs that systematically address the obstacles to alignment. They follow a holistic approach that goes beyond executive-level conversation and permeates the entire IT organization and its culture.

Doing so enables the IT organization to monitor and manage business services along with the technology that supports them. This concept—managing IT from a business perspective—is called Business Service Management (BSM).

Preparing to deliver BSM requires that the IT organization maintain an ongoing dialogue with line-of-business managers to determine their expectations of IT. The IT staff then needs to define the services required to support those expectations and ensure that the promised levels of service are viable.

THE IT/BUSINESS ALIGNMENT CYCLE

The IT/Business Alignment Cycle provides a simple methodology for managing a broad range of activities to achieve IT/business alignment. This methodology

helps the CIO and IT organization overcome alignment barriers and helps redefine the metrics for IT effectiveness—using business, rather than IT, objectives.

The four phases of the IT/Business Alignment Cycle are:

1. **TALK TO THE BUSINESS.** Find out what's important and commit to IT service levels that support key business objectives.

2. **MODEL THE INFRASTRUCTURE.** Link IT components to critical business services and prioritize what's important and what's not.

3. **MANAGE OPERATIONS.** Support users and manage infrastructure resources to ensure delivery of promised service levels.

4. **MEASURE RESULTS.** Verify and communicate that IT is keeping its commitments and use data to continuously improve operations.

This four-phase cycle groups best practices that help the CIO and IT management ensure ongoing alignment of business objectives with IT capabilities. It fosters organization-wide shared expectations between business and IT managers, and helps identify common workflows and processes within and among IT functional groups to make IT/business alignment sustainable and scalable. The methodology is not necessarily sequential, as activities may be performed in parallel.

HOW IT WORKS

In Phase 1, service goals are defined in service level agreements. IT and business managers work together to determine which business services are critical to the success of the business. Based on that knowledge, IT can translate those business services into IT services and establish agreed-upon service levels.

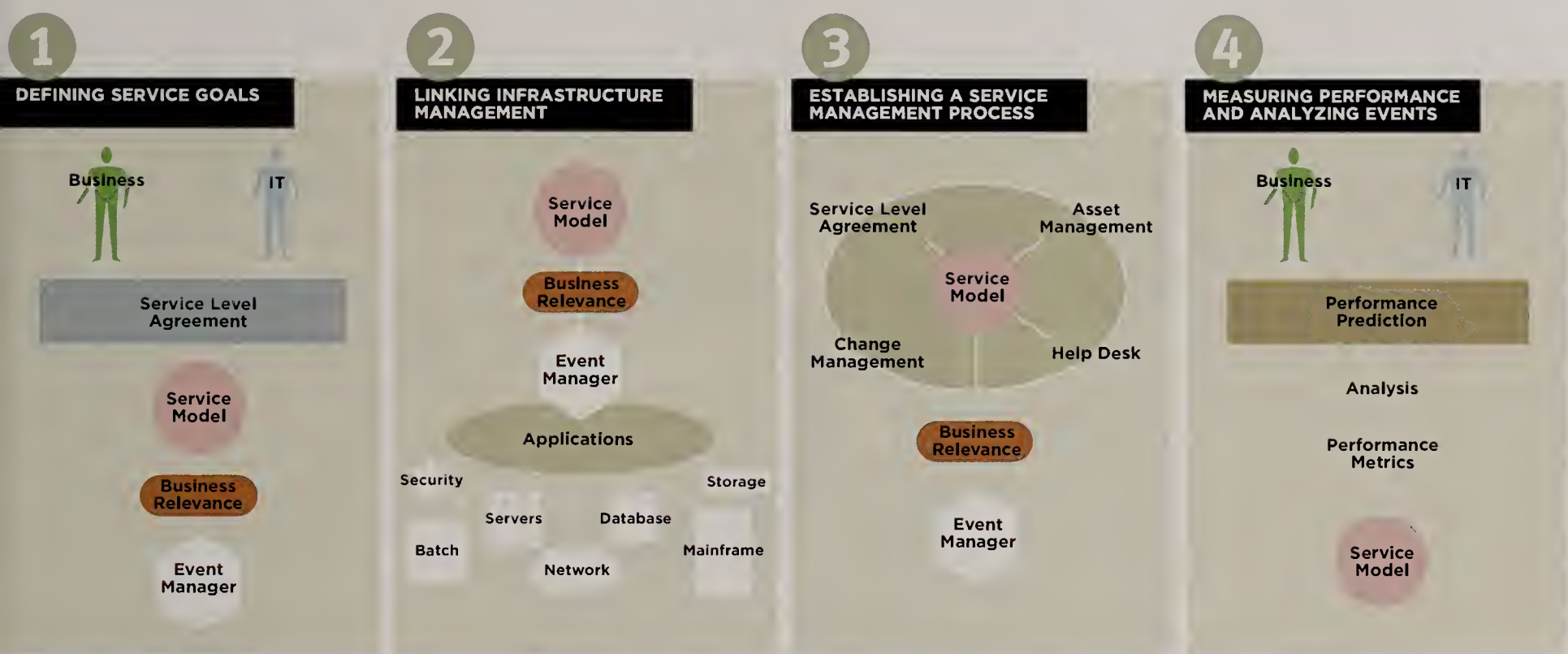
In Phase 2, underlying infrastructure and service dependencies are defined in the service model—the essential component for enabling the IT organization to relate diverse technologies to critical business services. For example, the Asset Management system can feed service information for all the infrastructure components into the service model. So as IT events occur, the IT staff can understand their business relevance and respond accordingly.

For more effective support of core business services, the service model can be integrated with other IT serv-

IT ALIGNMENT OBSTACLES AND KEY DIFFERENTIATORS

Obstacle	Not Aligned	Aligned
Reporting structure	IT executive reports to the CFO or other operational executive who has significant non-IT responsibilities.	IT executive reports to an executive that understands the strategic potential of IT. IT executive's sole responsibility is IT.
Cultural attitude toward IT	IT is treated as a utility.	IT is perceived as a significant contributor to strategic success.
Perception of IT service	IT has a recent history of unsatisfactory service, and the perception of disorder and/or high cost.	IT has worked to overcome perceptions of poor service.
IT access to business goals and strategy	IT leadership does not have an adequate level of understanding of business goals or business strategy.	IT leadership is in the business planning loop at a detailed level and anticipates frequent changes.
IT planning and project prioritization	There is no meaningful process for prioritizing IT projects or tasks based on business priorities.	The IT organization has dynamic and pragmatic planning processes based on business priorities.
Communication regarding IT's role	There is no enterprise-wide or cross-silo prioritization process for business initiatives.	IT leadership actively communicates IT's successes with other executives and business partners.
Communication style	IT leadership and middle management communicate more effectively with technical staff than with business people.	IT leadership and middle management speak in business terms and communicate effectively with business people as well as technical staff.
IT's strategic role	IT is not "at the table."	IT is "at the table."

SOURCE: GIGA, A WHOLLY OWNED SUBSIDIARY OF FORRESTER RESEARCH, INC.



ice support processes and use Event and Performance Management tools to link infrastructure capabilities to the business and establish a service management process as part of Phase 3. The IT staff continues to monitor and manage different components of the IT environment. Events are automatically detected and routed to the service model, where the events are correlated to their business service impact. The result is that when a service is impaired, the business relevance is already identified. The systems are then in place to resolve issues seamlessly, based on the priority of the affected business service. Self-healing and recovery actions can be set up to occur automatically.

By proactively managing the infrastructure, the IT organization can prevent problems from happening altogether. Automated utilities can monitor thresholds, analyze problems and perform corrective actions to avoid downtime and service-level degradation. Business performance can be improved with infrastructure tuning.

IT professionals can also proactively manage service by using Help Desk systems to effectively communicate with end users and resolve problems. Incident response times can be updated in the Service Level Agreement tool. With the help of a Change Management system, the service model can automatically adapt to the changes in the infrastructure.

Finally, to ensure optimal performance in the environment in Phase 4, performance metrics are continually collected to a central data store for analysis. This enables the company to understand trends, analyze the capacity requirements of the current environment and plan future investments based on business needs. Predictive tools help IT identify performance requirements before response time problems occur. These re-

quirements are also reflected in the service model. As a result, the company can prevent problems before they occur. But more importantly—by measuring and demonstrating performance against service levels that directly support business objectives—IT can demonstrate business value in terms that the business understands.

The IT/Business Alignment Cycle works best when integrated and automated with software applications and monitoring tools. In fact, CIOs can often leverage work that has been done for past IT planning processes, such as disaster recovery planning. These will include the business requirements for availability and performance.

EMBRACING AN INTEGRATED SOLUTION

Aligning IT with business goals to deliver BSM doesn't have to be a burden on CIOs or their teams. By focusing on process improvement and using or augmenting existing systems, the IT/Business Alignment Cycle provides a simple, systematic approach for achieving IT/business alignment. By committing to this methodology and integrating activities, CIOs and their teams can align their entire organization to make improvements and demonstrate value to business managers. Setting expectations and communicating success in terms that are relevant to the business are paramount to the process, and are essential requirements to "join the table" of strategic business partners. For CIOs, that means a more meaningful career and a more receptive environment for IT funding requests. ★

¹ Giga, a wholly owned subsidiary of Forrester Research, Inc., "Overcoming Obstacles to the Alignment of IT and the Business," Gene Leganza, June 2003.

one small step for HCA

one giant leap toward business and IT alignment

By Meg Mitchell Moore Photograph by Wolf Hoffman

WHEN LEE ADAMS joined Hospital Corporation of America (HCA) last summer, he was no stranger to the volatility of the business world. After many years working in IT in the telecom industry, he had learned how to balance IT initiatives in a quickly changing business climate. But he found a whole new set of challenges awaiting him as VP of infrastructure services in the Nashville, Tennessee, headquarters of HCA, which owns and operates approximately 200

hospitals and other health care facilities in the United States, England and Switzerland.

Today's health care landscape is full of barriers and opportunities. Not only do new privacy laws and federal regulations require strict adherence, but an increasing number of niche treatment options like one-day specialty centers means patients have more choices than ever. Excellent patient care and patient safety are the primary focus.

In recent years IT has become vital to ensuring safety at HCA. "Fundamentally, we're motivated to deliver excellent patient care. We also must stay competitive and satisfy a variety of ever-changing regulations. More and more of our caregivers rely on IT solutions to do that work," says Adams. IT solutions touch nearly every aspect of patient care, from the admitting process to ordering tests and medications. Hospital caregivers are using technology for patient care, such as delivering medication by scanning patients' armbands and using wireless computers to track dosages. "We've taken systems that in the past were only used for back-office functions like billing, and pulled them into the real-time delivery of patient care," he adds.

A full-page photograph of a man in a dark suit, white shirt, and patterned tie standing in a server room. He is positioned in the center, looking directly at the camera. To his left are tall server racks, and to his right is a large, curved wall. The floor is made of large, light-colored tiles. The lighting is dramatic, with strong highlights and shadows.

LEE ADAMS, VP of infrastructure services at HCA, says a Business Service Management project requires a combination of understanding, desire and patience.

SPECIAL REPORT

One of Adams' goals at HCA is to champion something he found useful in the telecom industry: Business Service Management, or BSM. The key to BSM is aligning the business side closely with the IT side and measuring IT services in a way that business people understand. In telecom, Adams learned, failing to align IT services with business goals can spell disaster for both sides. "In IT, it was very easy for us to get lost in the technology and to generate measures that were from the inside out," he says. "For example, we might measure ourselves around a network or server element versus a business function. We kept that gap between us wide."

Businesspeople, of course, don't much care about networks and servers—but they do care about the services those systems deliver. When he worked with BSM in the telecom industry, Adams learned to measure IT services through the eyes of the customers. At HCA, what that means is taking advantage of the growing connection between IT systems and patient care.

One step for HCA will be to establish a common understanding of BSM across the company. It's not just another acronym; it's a new way of thinking about the business, and a new way of measuring IT effectiveness. "The business has always thought it was important for us to do that, but I don't think they knew how to articulate it," he says. "I think in IT we didn't understand why it was important, so we're learning how to view that."

Fair enough. But how do you introduce a new way of thinking to a company that's been around in some form since the 1960s? At HCA, you start by identifying the gaps between what the business needs as services and what IT understands about those services. Then you work to close those gaps. An important part of this process—perhaps the trickiest part, because it's difficult to put in tangible terms—is learning how to keep score from the IT customers' perspective.

"We need to ask ourselves, 'How do we measure in their eyes?'" Adams says. "I really think to do BSM right as IT professionals, we've got to figuratively sit in

their world, in their chairs, and come at it from that angle." That means paying attention to how the systems play into the day-to-day work of different functions and levels within the company. "What a CEO of a hospital might want to know is going to be different than the chief nursing officer or the person running the pharmacy department," Adams says.

Specifically, Adams' plans involve what he calls "putting a BSM wrapper" around the organization's core clinical systems. HCA relies on a collection of modules that operate every piece of the company's hospitals and health care centers, from admissions to pharmacy to radiology. HCA's BSM initiative is still in its early stages, but it has the potential to allow the people on the front lines of patient care to see into the systems and gauge their effectiveness. The technology behind BSM can act as part archaeologist and part translator, digging into management systems, finding results and turning those results into something businesspeople can understand via "dashboard" indicators. BSM will tailor results to the needs of IT customers, rather than expecting nurses and doctors to speak the language of IT.

If there's one thing Adams' work in telecom taught him, it's that implementing BSM takes a particular combination of understanding, desire and patience. "You don't want to try to solve world hunger on Day One," he says. "If you don't start simple and grow into something more robust, you'll probably never get anything delivered."

You can't throw a stone in the quickly expanding universe of business service management without hitting someone who will tell you that BSM is a journey, not a destination. The tricky thing about that is, if you're in the midst of journey, you need to set milestones in order to determine your progress. HCA is going to look for those small victories along the way that advance IT as a strong business partner. As technology becomes more and more entrenched in the real-time delivery of patient care at HCA, the company knows that BSM's benefits should be visible to the patients by the level of care they receive. The role BSM plays, however, should be invisible.

What HCA is doing is laying a strong foundation to keep up with change as the health care landscape transforms around it. In the end, BSM can help show that technology has achieved business imperatives in HCA's hospitals and health care centers, and the strategy will have done its job. ★

EDITOR'S NOTE: Enterprise Leadership will share HCA's BSM evolution as it unfolds. Please check back to see the progress.

BSM is not just another acronym, but a new way of thinking about the business, and a new way of measuring IT effectiveness.

TALKING POINTS

About HCA's BSM Roadmap

As the new VP of infrastructure services at HCA, Lee Adams is leading the health care group's transition to a Business Service Management approach to IT leadership. He's beginning by:

- Analyzing the gaps that exist between IT and business
- Educating business leaders, in business terms, on how BSM will add value to the company's core mission
- Offering real-life examples to show how BSM can help health care professionals in their jobs
- Getting to know his customers, so that he better understands and can serve their jobs, functions and IT needs
- Starting small and building upon his gradual BSM successes.

EXECUTIVE INSIGHT BY JAY GARDNER



BSM IS ALL ABOUT UNDERSTANDING AND SUPPORTING KEY BUSINESS PROCESSES

BSM AT BMC SOFTWARE

OUR OWN STORY

IT ORGANIZATIONS ARE good at watching flashing lights and monitoring thresholds. We constantly check all these electronic devices that tell us whether our systems are working properly or if something needs attention.

But sometimes all we see are lights. We don't see the real business impact of the panels—what's behind the lights.

Case in point: Not long ago at BMC Software, we received a flashing alert at 2:00 a.m. that one of our network routers was down. Our administrator on duty didn't know where the router was located, but that seemed less important than the failure. We're a global company, after all, and at any given hour of the day our information network is mission-critical to thousands of employees worldwide. This administrator tried and failed to solve the problem, so he called in a colleague. We then had two people up in the middle of the night restoring this router. Of course, eventually they succeeded.

The next morning, after devoting all these resources to the problem, we located the rogue router—not in one of our key global offices, but in a soft-

ware consultant's house in Colorado. At 2:00 a.m., the busted router wasn't impacting our business at all!

The lesson learned from this experience is about setting the proper context for the work IT does in a company. It's about looking at technology from a bigger perspective: understanding how important it is to the business and helping technology leaders like us see how, when the opportunities arise, we can better prioritize our responses and our resources to minimize negative business impact and maximize our use of investment dollars.

At BMC Software, we've developed not just a line of products and services to support this idea, but a mind-set devoted to the concept of aligning IT management to business services. We call it Business Service Management (BSM). In a nutshell, BSM is a means of understanding your company's strategic business processes (e.g., supply chain management or an online

store), mapping the IT systems that support the services and then ensuring the proper investment in these critical systems. The results: improved business performance and a reduction of cost and complexity in IT infrastructure and services.

BSM implementation is straightforward, but it takes a focused effort. At BMC Software, we identified and documented the core business services across the enterprise, creating a model against which we could map our IT components. We documented the IT processes and assets that support those services, and loaded that data into the Remedy Asset Manager. Next, we loaded the IT and business service relationships into BMC Service Impact Manager, which in turn linked to our service management infrastructure, allowing service monitoring from a business perspective.

Now, we have a far better understanding of what's behind our own "flashing lights."

BSM augments our current systems and enables us to instantly understand the business impact of an IT failure without relying on corporate memory. Rather than sending an alert that simply notifies administrators that a particular component is down—say, if another network router fails—we can tell them the specific business impact of that failure, so they can respond appropriately.

And in the end, that's what BSM is all about: the business. It's about understanding business processes and the impact of what we in IT do to support them. Because businesses are dynamic, BSM is a journey—not a destination—and one on which every business should embark.

It isn't about watching the flashing lights. It's about knowing which lights matter! ★

Jay Gardner is CIO of BMC Software. If you have a question for Jay about BSM at BMC Software, please write to him at jgardner@bmc.com.

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ONE OF THEM WILL LOSE 200
CUSTOMERS PER MINUTE.

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Richard Falkenrath, Homeland Security, The White House

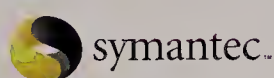
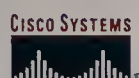


Admiral Thomas Collins, Commandant, U.S. Coast Guard

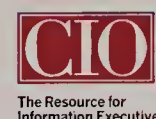


Arthur R. Miller, Harvard law professor/TV commentator

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and not nearly enough time on the metrics and incentives that will make it easier and more economical for their people to do it. Perverse, unhappy outcomes are the consistent result.

The obvious examples come from cost-cutting and outsourcing. Many implementation metrics are biased in favor of IT costs saved—by reducing calls to the help desk, for example—rather than measuring improvements to a business process. These metrics reward IT managers who “cut costs” and “work to put themselves out of a job.” In this regard, the incentives work perfectly: IT budgets are indeed cut, and those IT managers get a lovely severance package.

Of course, as every reader of this magazine well knows,

The dirty little secret here is that some of today's most “successful” CIOs are executives who've dramatically cut their own budgets while effectively raising the IT spend for the rest of the enterprise.

many of those costs stripped out of IT ultimately reappear elsewhere in the budgets of the business units: Servers and databases don't run themselves. Yes, the IT managers are gone, but it's often unclear for more than a year who exactly is going to be held managerially accountable for the systems left behind.

In other words, the IT budget is down dramatically—but are the actual costs to the enterprise really lower? IT headcount is undeniably slashed, but are the managerial costs of IT coordination, modification, maintenance and procurement really that much cheaper?

The simple and honest answer to those questions for most organizations is: We haven't a clue. Why not? Because, of course, that's not what these companies have been measuring. They've been measuring IT expenditures and investments with the same level of rigor and sophistication that they once measured pro-

grammer productivity. Why are they doing that? For the most obvious reason: They're not being rewarded for cutting costs for the organization; they're being rewarded for cutting IT costs. Anybody who believes that cutting IT budgets and reducing the enterprise IT spend are synonymous should not even think of being a CIO.

The dirty little secret here is

that some of today's most “successful” CIOs are executives who've dramatically cut their own budgets while effectively raising the IT spend for the rest of the enterprise. True, some of this spend may be better aligned with individual business unit aspirations. But then, that hardly reflects any strategic or managerial prowess by the CIO. Remember: Perverse metrics linked to perverse incentives always yield perverse results.

At a series of workshops at Microsoft last year, it was striking to hear enterprise architects discuss the gap between metrics that measure improvements in technical *capacity* versus those that measure enhancements in business *capability*. Enterprise architects have conflicted loyalties. Most IT organizations have their investments and incentives more clearly aligned with technical capacity improvements—which are far easier to measure—than with improved business capability—which requires P&L managers to crisply define what they want IT to accomplish. The business roles and goals of architects are in unavoidable conflict.

So the workshop participants played with the notion of how we should measure ROTCI—return on technical capacity improvements—versus ROBCI—return on business capability improvements. Should ROBCI drive ROTCI? Or should ROTCI be used to encourage line managers to push for more ambitious ROBCI? How could these measures be better aligned? The group ended up using metrics as a medium—not just a technique—for thinking through and articulating what capacity and capability should mean throughout the enterprise.

It's dangerous for CIOs to take the approach that ROTCI always drives ROBCI. Instead, they need to better understand how line managers define business capability improvements and invest in technological capacity accordingly. And once they develop these new metrics, they need to come up with better incentives to achieve the business goals.

The era of “dollar-a-word/lines-of-code” metrics and remuneration simply doesn't cut it. Quite frankly, those kinds of lazy measures and incentives never did, but organizations could once get away with that kind of laziness. Today, they can't. They shouldn't. Smart CIOs should be in the vanguard of innovating a new generation of IT incentives. They've got every incentive to do so. **CIO**

Michael Schrage is codirector of the MIT Media Lab's eMarkets Initiative. He can be reached via e-mail at schrage@media.mit.edu. Please e-mail feedback to letters@cio.com.



Share Your Opinion

Michael Schrage says CIOs need to come up with new metrics that judge implementations not by how much technical capacity they've added but by the improved business capability they've brought to the enterprise. What do you think? Go online to post your reactions in the **ADD A COMMENT** box at the end of this article.

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As always, competition was stiff for our CIO Enterprise Value Award winners. But this year we've added a twist—industry categories allowing companies to compete with business peers for this prestigious award—as well as a special new honor.

CIO the 12th annual ENTERPRISE VALUE AWARDS

B Y L A F E L O W

EVEN AS THE ECONOMIC MALAISE

that has gripped the business world for the past two years shows signs of easing, value leads the discussion when the topic is IT investments. Each of this year's entrants for the CIO Enterprise Value Awards faced formidable competition from a field of nearly 150 applicants. As in previous years, the caliber of the entrants was high, whether they could demonstrate straight-up economic value and ROI, or value generated from consolidating systems, efficiencies gained through streamlined processes or—even less tangible but no less important—measures of social value.

But this year, we've modified the judging and awards process. In the past, applicants from all industries competed directly against each other in one pool. Our panel of judges—all CIOs at leading companies such as Raytheon and Staples—often grappled with the inequities of comparing entrants from different industries. Because industries are at different stages in the use of IT, the judges were often nonplussed about how to compare the value of an initiative from, say, a paint manufacturer to that of a mutual fund company. This year, we have leveled the playing field by creating individual awards within specific industries. This process allowed companies and their systems to be judged against peer companies that have many of the same business challenges. To this we have also added a new level of higher achievement: the Grand CIO Enterprise Value Award. This eminent award recognizes the one organization that rose to the top across all industries from among the CIO Enterprise Value Award winners.

the 2004 WINNERS

GRAND WINNER

Government

Chicago Police Department

Citizen Law Enforcement Analysis
and Reporting relational database

Pages 56, 66 and 96



WINNERS

Banking/Brokerage

Academic Management Services

Integrated Counseling and Enrollment
Web portal

Pages 74, 84 and 96

Retail/Wholesale

Ace Hardware

Enterprise data warehouse

Page 84 and 96

Transportation

Continental Airlines

Enterprise data warehouse

Page 84 and 96

High-Tech

Dell

Integrated Dell Desktop call center system

Page 74 and 96

Insurance

Guardian Life Insurance

Transcend transaction processing system

Page 66 and 96

Professional Services

Korn/Ferry International

Management Assessment System database

Page 84 and 96

Health Care

Pfizer

Investigator Net electronic data capture system

Page 66 and 96

Manufacturing

Procter & Gamble

Corporate Standards System database

Pages 66, 74 and 96

Travel

Worldspan

LINK integrated order management system

Page 74 and 96

Of the 10 CIO Enterprise Value Award industry winners, the one that most impressed our judges was the Chicago Police Department, with its CLEAR (Citizen Law Enforcement Analysis and Reporting) system, which has helped Chicago's finest dramatically increase their rate of solving crimes. It's hard to place a dollar figure on safer streets, but the value to Chicago's citizenry is obvious. Owing to the striking social value of CLEAR, the Chicago Police Department was chosen as the first-ever winner of the Grand CIO Enterprise Value Award. "CLEAR is the best example we've seen of not just transformation, but also leveraging change management to sustain enterprise value," says Rebecca R. Rhoads, CIO of Raytheon and a veteran Enterprise Value Awards judge.

VIEW ON VALUE

In determining the extent of value created by the nominated systems, our CIO judges (see "How We Picked the Winners," Page 92) examined value from five perspectives: the impacts on finance, strategy, customers, operations and society. Financial impact is the big one. It relates directly to ROI through lower costs caused by streamlined operations and increased profits. Strategic value comes into play when a company is able to enter new markets, transform the competitive landscape within its market and boost its market share. For instance, Academic Management Services' (AMS) Integrated Counseling and Enrollment system earned high marks for both its financial and strategic value, as it helped the company enter a new line of business that now accounts for nearly 25 percent of its revenue.

In choosing the Grand CIO Enterprise Value Award winner from among the industry winners, the judges also considered social value, the system's impact on education, health, the environment and public safety. In the end, it was the Chicago Police Department's tremendous impact on public safety that captured our judges' votes.

COMMON THREADS

When examining the 10 industry winners, we compared and contrasted the approaches they took when deploying their systems, and we share some of their strategies and critical success factors in the stories that follow. While all of our industry winners exhibited exemplary enterprise value, their particular strengths emerged in several categories, including change management, integration and leveraging of customer data.

- Managing change properly is critical to ensuring a system's success. The Chicago Police Department, Guardian Life Insurance, Pfizer and Procter & Gamble are masters of change management.
- Consolidation is the challenge for AMS, Dell, P&G and Worldspan. Each of these companies aggregated multiple databases into single systems that helped drive customer service, internal efficiency and cost savings.
- Many companies have huge stores of customer data, but not many know how to dig deep into that data to generate value. However, Ace Hardware, AMS, Continental Airlines and Korn/Ferry International have learned how to make the most out

Of the 10 Enterprise Value Award industry winners, the one that most impressed our judges was the Chicago Police Department's CLEAR system, which has helped Chicago's finest dramatically increase their rate of solving crimes.

Systems with significant customer impact provide the customer with more choices for products and services at a lower cost, and more rewarding transactions. An example of this is how Continental Airlines helped its flight service staff forge better connections with fliers by giving them greater access to customers' history with the company. Through increased operational effectiveness and increasing margins, the winning organizations were able to demonstrate operational impact and value. For example, Procter & Gamble cataloged all its product and packaging technical standards within its Corporate Standards System, which provides tremendous value for its research and development teams.

of data they already had to create new lines of business, new opportunities for revenue, and greatly increased customer satisfaction and loyalty.

The systems that won this year's CIO Enterprise Value Awards clearly demonstrated the ROI, the productivity and the efficiency gains needed to be honored. Even as the dark clouds of a stagnant economy begin to clear, this year's winners excel at getting the most bang from every IT buck and generating award-winning value for their organizations. 

Send feedback to Features Editor Lafe Low at lflow@cio.com.

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You know what they wanted last week.
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How the Chicago Police Department used technology to fight crime and become the first Grand CIO Enterprise Value Award winner

Taking IT to the

CHICAGO'S WEST SIDE, THE SHAKESPEARE DISTRICT,

North Campbell Avenue, three blocks from Division, Wednesday night, November 19. Unmarked police cruiser unit 8i responds to a 9:06 p.m. dispatch. Violation of protection order.

The cruiser pulls up to a two-story brick house. Several women stand watching on the sidewalk and neighboring stoops. Several men are walking on the other side of the street, and two are hanging out in front of a store, also watching.

One of the women, Veronica, tells Sgt. Greg Hoffman that her estranged husband, ordered by the court to keep his distance, tried to approach her. He was wearing a hat for disguise. "He never wears a hat," Veronica tells Hoffman. He took off in a truck with friends, she says, pointing out one of her husband's associates who stayed behind, a tall man wearing red sweats. Another patrol car pulls up, and officers round up the men across the street, including the man in red. The men stand, spread-eagled against a stockade fence, detained by Hoffman and Assistant Deputy Superintendent Ron Huberman.

B Y R I C H A R D P A S T O R E

PHOTOGRAPHY BY MARC POKEMPNER



On the night of Nov. 19, Assistant Deputy Superintendent Ron Huberman (right) and Sgt. Greg Hoffman answered a complaint. They roused several men, frisked them and then turned to CLEAR, the Chicago Police Department's unique enterprisewide relational database.

After the cops pat them down and start asking them about Veronica's husband, Huberman uses the patrol car's touch-screen notebook (one of 2,000 outfitted in Chicago Police cars) to run Veronica's address. He touches "send," and less than five seconds later,

CRITICAL SUCCESS FACTORS CHICAGO POLICE DEPARTMENT

DEVELOP SYSTEMS with extensive user input in a joint application development process.

USE EMPLOYEES to train their peers on new systems.

DESIGN INTERFACES to resemble established paper forms and user norms.

MARKET NEW SYSTEM internally with powerful anecdotes that reflect the department's core mission.

PHASE OUT old systems and tools after rollout to eliminate workarounds.

four incident reports dating back to early 2003, mined from the department's relational database, appear on screen. Domestic battery. Two cases of violating a protection order. A suspiciously parked car. Veronica's abusive husband doesn't seem to know how to stay away. He also doesn't know that tonight's incident will join 8.5 million others in the CLEAR (Citizen Law Enforcement Analysis and Reporting) system, the Chicago Police Department's unique enterprisewide relational database.

WHY THE CPD WON THE GRAND CIO ENTERPRISE VALUE AWARD

This violation isn't the most serious crime reported tonight. There are gang wars going on in the Shakespeare and several of the other 25 districts the police use to carve up Chicago's 228 square miles. But violating a protection order is a deadly warning sign. Four nights earlier, suspected domestic violence left 19-year-old Alia Chavez dead of a stab wound in her basement apartment on North Rockwell.

That's one reason the officers questioned the men against the stockade fence. They were collecting physical identification and contact data on serially numbered "contact cards" that will be entered into the database and cross-referenced with known associates—including Veronica's husband. Now, if one of these men does something wrong, the police will not only have the offender's name and criminal history, they'll know who he knows and who knows him.

This sort of intelligence-driven police work is a strategic objective for most metropolitan PDs, since 9/11 launched a new era of crime-fighting, but the Chicago Police Department (CPD) is leading the way. And it's something of a miracle that it's happening here, in the country's second largest police force after New York City's.

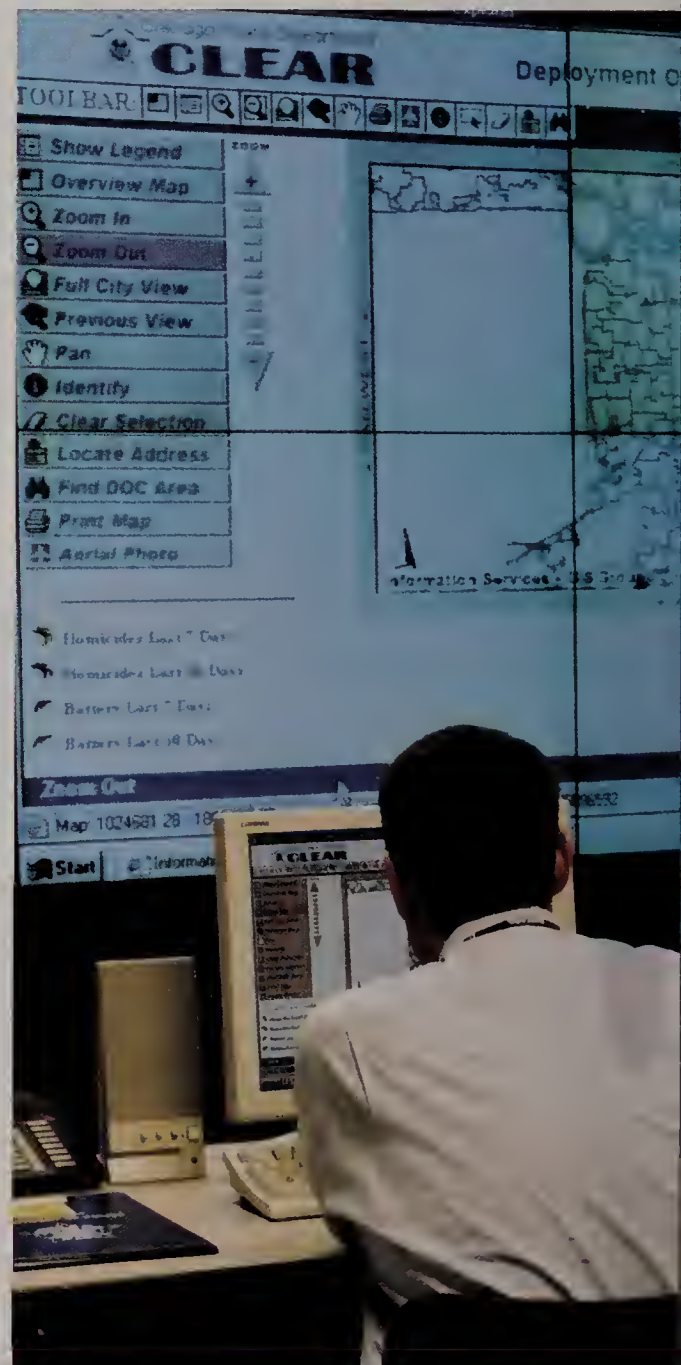
Chicago's pursuit of IT value has been methodical and tenacious. Obtaining and maintaining funding, overcoming user resistance and laboring through drawn-out training sessions have been a continuous struggle. With nothing available to buy that met its vision, Chicago needed to partner with database giant Oracle. Three years and \$40 million later, 50 percent of the original vision and applications have been implemented. But even at the half-way point, the CPD has proven to the city, county, state and beyond that IT *can* work in big city policing and *does* reduce crime.

For those reasons, the Chicago Police Department is this year's sole recipient of CIO's top enterprise value distinction—the Grand CIO Enterprise Value Award. "Enterprise value in its highest form is the opportunity for IT to transform a business, to bring a whole new model into existence," says Rebecca R. Rhoads, CIO of Raytheon and an Enterprise Value Awards judge. "The Chicago Police Department totally changed the game."

CLEAR is an enterprisewide vision of how anytime, anywhere access to centralized, relational data can empower intelligence-driven crime-fighting. While other police departments are struggling to integrate legacy data and applications, Chicago decided in the late 1990s that to have maximum impact, all policing intelligence should be accessible in one spot, with all tools leveraging and feeding that repository.

The CLEAR database, deployed in April 2000 and now topping 200GB, is the foundation for a growing set of integrated CLEAR applications used by all of the department's 13,600 officers and most of its 3,000 civilians, plus an exponentially expanding base of users outside the city limits. In fact, the state of Illinois' crime data system will be replaced by CLEAR, which will serve as the State Police's data repository. Typically, 1,200 concurrent users run more than 7,000 queries daily against data that includes:

- ▶ Arrest reports
- ▶ Live cases' statuses
- ▶ Criminal activity by district, beat, street and address
- ▶ Rap sheets with aliases, nicknames and distinguishing physical marks
- ▶ Digital mug shots and fingerprints



- ▶ Seized property and evidence tracking
- ▶ Forensics reports
- ▶ Personnel data—number of arrests by each officer and many other performance metrics

CLEAR'S CRIME-STOPPING ROI

The national crime rate rose 2 percent from 2000 to 2001, after a decade-long decline, according to FBI reports. But crime in the Windy City has continued to fall. In fact, in the past three years—the period CLEAR has been operating—Chicago rates have dropped 16 percent; that's 34,564 fewer murders, rapes, robberies and other crimes against a person. And Chicago's leaders have no qualms about attributing their success in bucking the nationwide trend to the use of CLEAR's tools. "Crime in Chicago is declining, and I think it will continue to decline

because of our ability to be information-driven," says Barbara McDonald, deputy superintendent of administrative services and initiator of the CLEAR vision.

Chicago is also solving crimes and closing cases at a higher rate across the board. The percent of 2003 sexual assault cases solved through the first quarter is more than 69 percent, up from 43 percent in 2001, and the rate for solving aggravated assaults is up 13 percent from 2001. Across all crime categories, CPD detectives are solving nearly one out of three reported crimes, up from less than one out of four in 2001, and the department is besting the average crime-solving rates for the nation and for the eight largest U.S. cities (see "CLEAR Closes Cases," Page 60).

Because the CPD envisioned CLEAR as an integrated, countywide crime-fighting tool, it's

granted free, real-time access to law enforcement agencies in Cook County. But the demand quickly spread beyond the county. More than 225 agencies across Illinois now access the database to catch crooks, who are increasingly mobile. In many cases, these agencies are adding their own arrest data to CLEAR.

Further afield, Indiana has expressed interest in the source code, and the CPD has demonstrated CLEAR to the Los Angeles and Washington, D.C., police departments. Introducing a CLEAR presentation to leaders of his force, Washington Metropolitan Police Chief Charles Ramsey said, "I don't know of any other system like this in any other agency." The CLEAR system, he continued, "represents the best practice in the U.S."

Adds Washington Police CIO Phil Graham, "The CPD has created a model application that



Unfinished Business

What does the C in CLEAR stand for?

It's "citizen," and the Chicago Police Department hasn't forgotten that. But the citizen and business partnership is the one part of the CLEAR (Citizen Law Enforcement Analysis and Reporting system) vision that has yet to be realized. Applications were supposed to make it easier for citizens to conduct business with the police, file complaints and share information. And although Chicago has had an innovative community policing program in place since 1993, "I'm beginning to champ at the bit because I want to conceptualize the [CLEAR] community applications, which we've done very little in to this point," says Barbara McDonald, deputy superintendent of administrative services.

The department holds monthly beat meetings with citizens and provides a crime-mapping tool (<http://12.17.79.6>) and up-to-date crime stats for individual neighborhoods on its website. But other citizen participation plans have had to wait in line behind the development of CLEAR's infrastructure and crime-fighting tools. The department trumpets its crime-solving accomplishments through its *CrimeWatch* public service TV show, but McDonald says the department's reputation has not improved as much among the citizenry as it has among other law enforcement agencies.

—R.P.

other law enforcement agencies should be learning from if not adopting." The D.C. force is in the exploratory phase of evaluating how well CLEAR's applications, data warehouse and front-end interfaces will meet its needs.

A BADGE, A GUN AND A COMPUTER

How does the Chicago police force use CLEAR tools and data to solve and reduce crime? They hunt for clues and matches, same as they do on the street, just much more efficiently. For example, a search for all records containing "bunny" tattoos takes four seconds and turns up 85 matches

frequently as The Penguin or The Riddler.

A home in Streamwood, Ill., was invaded by two black men in 2003. The victims heard one call the other by a nickname. Streamwood detectives, searching on that name in CLEAR via their extranet connection, found matches. Detectives used the integrated mug shot system to generate a virtual lineup of these likely suspects on a computer screen. The victims identified the pair, and the cops nailed them.

The most advanced use of computing in reducing crime is predictive analysis. The Deployment Operations Center (DOC), a 20-officer special unit, uses street intelligence, CLEAR data and a new CLEAR crime-

are vying for dominance in this area," says Sgt. David Betz, pointing to a map with a relatively clear zone of several blocks, ringed by a dozen gun icons. "I can drop 35 extra police in this one area and saturate it." DOC officers make weekly recommendations to district chiefs to redeploy patrol officers in these locations. They also supply them with gang member suspects to look out for. "I can use CLEAR to find their hangouts, nicknames, and put faces with the names," Betz says.

The prediction concept seems to be working. Despite escalating gang hostilities city-wide, saturated locations have remained relatively quiet. Earlier in 2003, before DOC



Officer Robert Espino (left) and Assistant Deputy Superintendent Ron Huberman run an address through the CLEAR system via their patrol car's touch-screen notebook. In less than five seconds, they have four incident reports.

CLEAR Closes Cases

Beginning with CLEAR's implementation in 2001, the CPD began solving more crimes (meaning an arrest was made or a case closed by other means) and exceeding national averages

Crime Type	Crimes solved in Chicago since CLEAR implementation		Crimes solved in other U.S. cities (Population over 1M)
	2001	2002	2002*
Aggravated assault	55%	61%	49%
Auto theft	14%	18%	9%
Burglary	10%	15%	11%
Homicide	46%	66%	62%
Robbery	15%	20%	22%
Sexual assault	43%	56%	43%
Theft	19%	20%	15%
Overall Averages	21%	26%	17%

SOURCES: Chicago Police Department, FBI Uniform Crime Report

*Final 2003 crime data not yet available

from 2003. (*Playboy's* rabbit and Bugs are the most common forms of bunny.) Enlargeable full-color digital mug shots accompany each match. A search on the nickname "The Russian" turns up a man with 14 arrests, mostly for assaults. The location data with each arrest shows the offender bouncing between Chicago and Mount Prospect, a suburb. Police in Mount Prospect (who have access to CLEAR) investigating any assault by anyone nicknamed The Russian will zero right in on this guy, who apparently gets out of jail as

mapping tool to identify potential hot spots, particularly for gang activity. "Our initial vision for information-driven policing has come full-circle with DOC," says McDonald. "They're using CLEAR data to anticipate where crime may occur so we can have the resources there *before* it happens."

When mapped by CLEAR, locations of recent gang-related crime (indicated on the screen maps by little green gun icons) reveal patterns that point to areas where rival gangs are likely to cross paths. "I know four gangs

began its work, the city was up 25 homicides over the same period in the prior year. As of November, the city was *down* 33 homicides from the same period in 2002. Chicago's 2003 murder rate was down 7 percent from the previous year, the lowest since 1968.

THE PRODUCTIVITY PAYOFF

Predictive analysis may be the most interesting contributor to cutting crime, but boring old productivity is making a difference too. Consider these work-

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flow improvements enabled by CLEAR.

- Accessing mug shots: From up to four days without CLEAR to four seconds with CLEAR.
- Pulling a rap sheet: From four hours from request to receipt, down to seconds.
- Logging in seized property and evidence: From three hours, down to one hour.
- Checking offenders' prison status and release dates: From 30 minutes, down to one minute.

For legal reasons, arrest reports must follow a carefully prescribed approval chain, capturing signatures attesting to the truth of the information. Instead of paper reports going to watch commanders' inboxes to sit and wait, automated reports are electronically routed via XML file transactions to the right people, capturing their digital signatures—a change for which the department won grudging acceptance from the courts.

A “copy” function allows officers to cut and paste the same data from one report to the next. This function alone saves police so much time that one officer, who brought five offenders into the station on the same arrest,

refused to default to the paper forms when the CLEAR arrest system went down. He just waited for it to come back up.

Overall, the department estimates that these efficiencies have given it the equivalent of 1.2 officers for every one it had prior to CLEAR. Labor savings total 193 full-time equivalents, including \$5.3 million in overtime pay reductions. Productivity gains allowed the elimination of 345 clerical positions. Most important, 90 once-deskbound officers have been redeployed to the streets.

All told, the department estimates labor savings of \$88 million from 2001 through 2003, more than offsetting the \$40 million investment in CLEAR.

CLEAR'S HERO

Why is this happening in Chicago and not in your town? First, Chicago has a tradition of aggressive IT adoption dating back to 1984 when it first began capturing crime data in internal databases. It was willing to swallow the big up-front cost of developing CLEAR's enterprise database. (Oracle took nearly 10 months to develop the data model alone.) Second, the commanders say, there's the leadership of Mayor Richard Daley, who made CLEAR one of his priorities, and the past few CPD superintendents, who have made IT part of their agenda.

The third reason is Assistant Deputy Superintendent Ron Huberman.

“He took us under his wing and pushed resources, space, dollars and people to us,” says Sgt. Diane Shaw, who is on the team that built CLEAR's long-in-development and latest case-reporting application.

“Ron has made the difference with executive commitment. It wasn't good before,” adds Hardik Bhatt, director of development.

“Without Ron,” sums up Deputy Superintendent McDonald, “this wouldn't have happened.”

Sworn in as an officer in 1995, Huberman, 32, worked the streets, and then in October 2000 joined IS as its director. Despite having no IT background (he squeezed in an MBA and master of arts in social services in 2000), Huberman realized the department was not

leveraging IT the way it could. “I've worked the street and understand what officers need to solve crimes,” Huberman says. He put himself forward to help conceive and execute CLEAR, which is now his main responsibility as head of information services, R&D and policy, and the records division.

Huberman also brought in other cops to work on development. Beginning in 2001 with an ad in the *Chicago Police Daily Bulletin* inviting officers with an interest in IT to join him, he now has 18 officers detailed full-time on CLEAR development and training, not to mention hundreds who have helped in application development teams, focus groups and user acceptance testing, including new Chicago Police Superintendent Philip J. Cline.

“All our technology tools have been developed by members for members,” McDonald says. “It isn't some vendor coming in and saying, This is what you need.”

WINNING OVER THE COP ON THE BEAT

Pre-Huberman, the CPD gave itself two black eyes when it rolled out its 1999 case reporting component of CHRIS (Criminal History Records Information System). Developed without input from cops on the beat, rushed to meet Y2K deadlines, “there was no buy-in and no testing,” recalls IS Director Charles Padgurskis. “It went out as a big-bang rollout, and it just didn't work.”

The CHRIS data-entry screens did not follow the logical (and familiar) order of incident reporting. It was hard to enter data, and the data it asked for was oriented more toward bureaucratic oversight than police work. The uproar was so bad, “it still resounds in the halls today,” Padgurskis says. It took a year to implement angry users' change requests, which topped 200. The CHRIS system evolved and is in use today. But new incident and arrest reporting tools with wireless capability will replace it by the end of 2004. Patrol officers will input reports from their car notebooks, eliminating the 24-hour turnaround to get paper incident reports online and into the database.

The single most effective strategy in winning over users to CLEAR has been that offi-

Chicago by the Numbers

The CPD is the second largest police force in the nation (after New York City) based on number of officers

Sworn officers: **13,600**

Civilian employees: **3,000**

Population served: **3 million**

Area covered: **228 square miles**

Arrests per day in city limits: **700**

Arrests per day in surrounding municipalities: **250**

IT staff: **142**



Deputy Superintendent Barbara McDonald says, "Crime in Chicago is declining, and I think it will continue to decline because of our ability to be information-driven."

cers train and support the users in their own districts, says Officer Michael Tomasiello. Tomasiello is a user liaison for the new CLEAR automated arrest system rollout. Training takes many forms, including 20-minute briefings during morning roll-call, streaming video and two-day offsite training.

To minimize resistance and make training simpler, designers made the interfaces consistent with the paper forms they replaced and mirrored consumer shopping site designs. Online help manuals are available; wizard-style Q&A prompts guide users through data entry; single sign-on ability gets users into all authorized CLEAR apps, and rolling the mouse icon over record fields or boxes triggers pop-up help boxes.

Still, with 13,600 officers, even the most conscientious training doesn't always work

for everyone. A workflow audit revealed that one officer had nearly 100 incident reports piled up in his PC. When asked why he hadn't routed them to his superior, he said he just didn't know how. A half hour of one-on-one training got him on his way.

There's still resistance to change, particularly among older officers. The average age of officers in Chicago is early 40s. That's long in the tooth for a police force, Huberman says. But rigorous joint application development (JAD) sessions, acceptance-testing for each CLEAR app, and a 24/7 help desk have reduced grumbling. And, except for backup in case of system failure, alternative systems are eliminated once CLEAR modules roll out. (For more on how the Chicago Police and other Enterprise Value Award winners managed change resistance, see "No Small Change," Page 66.)

"It used to feel like the end of the world when we'd roll something out; resistance was so awful," Huberman says. By contrast, he adds, "we just added a paperless medical plan to our personnel suite, and it went live without a peep from anyone." IS actually has a backlog of 35 small projects requested by cops eager to leverage data in new ways.

WHEN THE GOING GETS TOUGH...

Copious training and the methodical JAD method (there are months of sessions and focus groups before any coding begins) have been a double-edged sword. While it all helps to ensure user buy-in and to develop useful tools, it also takes time. Since CLEAR applications are enterprisewide, it can, in fact, take more than a year and a half to train every user. Given staffing rules and requirements, only two officers per district can be taken offline for training at any given time.

Personnel changes slow things down as well. Huberman wages "a constant struggle" to hold onto cops detailed to IS. Because of resource constraints, they may be redeployed at any time. Civilian IT staff and Oracle consultants have helped maintain consistency on the various projects.

Another drag on the project has been the never-ending pursuit of funds. After working with Oracle on a time and materials basis from 1995, the department entered into a \$32 million partnership with the database giant in July 2001 (with Huberman as lead negotiator for the police). Chicago pledged \$12 million, and Oracle granted a 50 percent discount on 180,000 consulting hours and 1,000 hours of Oracle University training in exchange for shared ownership of the intellectual property. Under contract terms, Oracle's code is royalty-free, but Oracle can charge other clients for consulting and customization.

To keep development costs down, Chicago employed Oracle's CDM Fast Track development tool and rapid application development methodology, using a palette of preconstructed, built-in features to quickly deploy apps. Since user screen code is contained in the database rather than in the client/server tier, a code change made in the database is immedi-

ately available citywide. It took only 22 days to automate the paper-intensive contact card system into CLEAR. It would normally take three to four months, according to Bhatt.

But the discounted consulting hours have now run out, and Chicago must fund future CLEAR applications on its own. Huberman, who says he spends one-third of his time on funding-related work, is already on the case. He's secured \$10 million for post-partnership funding and anticipates Illinois will help fund CLEAR development now that State Police are planning to use Chicago's database as their own data repository. If necessary, Huberman says, he will consider imposing some sort of nominal user fee on outside agencies using Chicago's database to help pay for maintenance.

Technology challenges still to be overcome include obtaining enough wireless bandwidth to allow mug shots (and eventually video) to be accessed from the patrol car computers. The department is also replacing its entire network backbone with fiber (fiber was already in place, but speeds were constrained to less than T1). The problem has been Chicago's old infrastructure; some of the district stations go back to the 1800s, and the wiring is not much newer. But the oldest are being replaced by five new buildings now under construction.

GOING NATIONAL

Despite its slow, methodical rollout, there's little chance that CLEAR will stall, especially given the growing tendency of other law enforcement agencies to query and add data to it. Susan Hartnett, research associate for Northwestern University's Institute for Policy Research, says this extra-agency integration has been CLEAR's most notable success. In March 2003, 175 municipalities were hooked into CLEAR. By the fall, the number had jumped to 225. "It's growing faster than they expected," Hartnett says.

In fact, Deputy Superintendent McDonald was taken by surprise. Although she always envisioned CLEAR as a regional crime-fighting network, not just a local one, she was skeptical that it would catch on. "I knew it was technologically possible, but it was an issue of law enforcement waking up to the power of

Under CLEAR's Hood

Database: Oracle 9i, 200GB, 160 code tables. Queried by SQL, Crystal reporting tools. HTML DB development environment.

Architecture: Three-tier. All user screens and front ends stay in the database tier as SQL files. All reports and applications reside on distributed Web application servers.

Hardware: Sun's SunFire database and Internet application servers with Solaris 8 operating system. Sun StorEdge Disk Array storage area network. 2000 MicroSlate wireless mobile notebooks and 3,000 desktops.

Security/Continuity: Firewalls, encryption and digital certificates. User and server authentication where required. Automated component failover, one-hour site failover, disk mirroring, offsite (but still in Chicago) backup database and application servers. —R.P.

information-sharing," McDonald says.

Federal interest is growing too. The FBI, Bureau of Alcohol, Tobacco, Firearms and Explosives, and Drug Enforcement Administration are all tapping into CLEAR. Oracle, which has worked with Chicago to demonstrate the system nationally, is seeing momentum building around a national model. "The feds know that 90 percent of the effort will come from cops on the street; that's where we'll solve this problem of crime reduction and fighting terrorism," says Doug Adams, a regional vice president for the public sector at Oracle Consulting.

Good criminal information is good terrorist information, since many terrorists are shown to have prior criminal histories. This

would be particularly important to those policing the nation's capital, where the hope of the Washington PD is to become a regional, national and international information hub in the war on terror. "Information is a weapon in fighting terrorism," says Washington Police's Graham. Monitoring and interpreting data in advance of attacks "can only be done with access to and delivery of reliable information," which is a key feature of CLEAR, he says.

Just think about the possible advantage of knowing that a certain car, perhaps registered to a foreign national, was parked illegally in several sensitive areas in the U.S. capital over a period of months.

COPS AND THEIR COMPUTERS

Back on the local crime-fighting scene, Huberman and Sgt. Hoffman finish off their night patrol of the West side with a stop at the 14th District station. The cathedral ceiling, glass-walled lobby looks more like a boutique hotel than a traditional pea-soup-colored, grimy-walled government office. Every officer behind the front desk has a PC in front of him (or her, in two cases). One enters an incident report into CLEAR as someone tells her his problem in Spanish. Another officer is logging evidence into Etrack, CLEAR's inventory tracking system. Back in the lockup, an officer asks an offender to lift his shirt so that he can photograph his tattoos. Another person sits handcuffed in an interrogation room as an officer enters his arrest report into a laptop bolted to the table.

"When I started in '95, every district station had only one PC," says Huberman, watching all the computer activity.

"Man, this place has changed." **CIO**

Editor Richard Pastore can be reached via e-mail at pastore@cio.com.

Watch the Video

See actual Chicago cops using the CLEAR data warehouse to catch criminals, and learn more about the system from the people who built it. Go to the online version of this article and look for the **CLEAR Video Clips** box.

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**INFORMATION
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a strategy that uses people, processes and technology to store and tap critical business data throughout its lifespan of value.

IN THIS EDITION:

See how companies are turning their new regulatory challenges into business opportunities by leveraging the benefits of Information Lifecycle Management.

Information Management Is No Longer a Luxury; It's a Boardroom Issue

WHAT'S THE VALUE OF CORPORATE INFORMATION?

It depends on the lens through which it's viewed. Consider, for example, the medical records of a child in New York. To his parents, the records are a vital history of their child's health. To Daniel Morreale, CIO of the North Bronx Healthcare Network, those records also offer the opportunity to glean valuable insights on healthcare trends. And to the federal and state governments, they represent a regulatory obligation to retain that data for up to 28 years.

As the role of information grows more critical with each passing year, so do the challenges that come with managing it well. Nowhere does smart management come into play more than when it comes to complying with the thousands of regulations that mandate how companies worldwide store and manage their data.

"We all know that information can be one of the most valuable corporate assets out there," says Peter Gerr, an analyst at Enterprise Storage Group, a research company in Hopkinton, Mass. "But compliance plays a huge role. To me, compliance is really one of the driving forces behind what I see as an evolution in how we manage and think about information."

Many companies have long wrestled with the issues of internal information management, but now they must also grapple with the dictates of corporate governance and new regulations such as Sarbanes-Oxley and the Health Insurance Portability and Accountability Act (HIPAA). While it might be tempting to think of compliance as affecting but a few industries, such as healthcare or financial services, the truth is that compliance touches almost any organization that collects and manages data.

REGULATORY
COMPLIANCE**KEY ISSUES MAKING THE LIFECYCLE APPROACH TO
REGULATORY COMPLIANCE ATTRACTIVE**

- **REGULATORY COMPLIANCE MANDATES**
- **APPLICATIONS ARE INCREASINGLY INTERDEPENDENT**
- **NOT ALL DATA IS CREATED EQUAL**
- **ONLINE ACCESS**

**"To me,
compliance
is really one
of the driving
forces
behind what
I see as an
evolution in
how we
manage and
think about
information."**

—Peter Gerr,
Enterprise
Storage Group

Consider Sarbanes-Oxley, which regulates the way public companies manage their financial information. According to Gerr, the whistle-blower part of that legislation also applies to private companies. Any private company with the thought of going public must be in compliance with Sarbanes-Oxley as well, adds Roy Sanford, a vice president of markets and alliances at EMC Corp., the storage solutions provider based in Hopkinton, Mass.

"There are more than 15,000 regulations alone in the U.S. at the federal, state and local levels, and about 20,000 regulations around the world that govern the use of information," Sanford says. "They touch about any organization you can think of—public, private, nonprofit, all are affected by regulations outside of the control of the organization."

Many companies have instituted internal information governance methods that must also be met as part of a new focus on corporate governance overall.

The issue of regulatory compliance challenges the traditional IT approach of storing every bit of data, because it requires a look at information across its entire lifecycle and affects everything from retention periods to deletion policy to data authenticity.

"We feel that compliance will have a huge material effect not only on how companies manage information, but also on how they think about the value and risk that information holds," says Gerr.

THE IMPACT OF COMPLIANCE

Business risk, the fear of regulatory violations and potential fines all speak to the need for compliance. "In many cases, the regulations are new and companies just

don't have the capabilities in place to meet them," says Mark Lewis, chief technology officer at EMC. "Many fail to have a centralized information structure that allows for the implementation of information management policies in the first place."

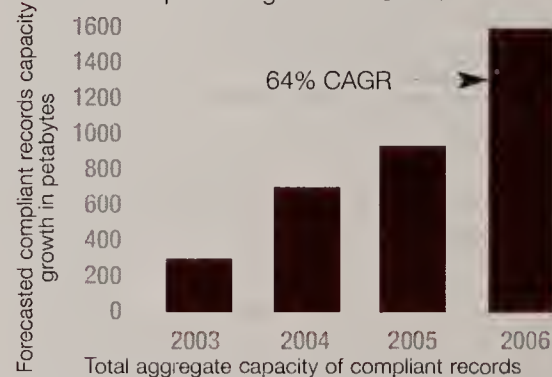
Bottom line: It's a whole new world out there for companies that rely on information, particularly as it transforms to "all digital." For many organizations, that means there's no "hard copy" to back up some information—email comes to mind—making compliance and authenticity even more difficult.

"We're almost all electronic," says Morreale of the North Bronx Healthcare Network. "It's part of the problem because we can't touch the data that's been stored in the clinical information system—can't touch, can't delete or purge." At the same time, Morreale recognizes that some of that data has outlived its regulatory value. He needs a tool that will let him discard the outdated data while keeping the rest.

Informational compliance is as much about smart content and resource management as it is about regulatory compliance. CIOs must figure out how to apportion IT resources to manage an ever-growing pool of information, some of which legally must be retained for years. The effect of accumu-

**GROWTH IN STORAGE CAPACITY
FOR COMPLIANT RECORDS**

The capacity of compliant records will increase from 376PB in 2003 to 1,644PB in 2006, representing a CAGR of 64%



SOURCE: ENTERPRISE STORAGE GROUP,
COMPLIANCE STUDY, MAY 2003

The need to meet compliance requirements will continue to grow, requiring methodologies and technologies to understand the value of information and how to manage it accordingly.

FIXED CONTENT: INFORMATION RETAINED FOR ACTIVE REFERENCE OVER THE LONG TERM

- | | | |
|-----------------------|--------------------------|----------------------|
| • Contracts | • CT scans | • Newspapers |
| • Check images | • Clinical trial results | • Periodicals |
| • Document images | • Digital evidence | • Proteomic data |
| • Email & attachments | • Genomic data | • Seismic data |
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| • Audio conference | • Historical documents | • Training materials |
| • Backups | • Insurance photos | • Transcripts |
| • Biometric data | • Letters | • Video conferences |
| • Blueprints | • Manuals | • Videos |
| • Books | • Monthly reports | • White papers |
| • CAD/CAM originals | • MRIs | • X-rays |
| | • News clips | |

lating information for decades has a profound impact on how to classify, where to keep and how to recover it.

Like many CIOs, Morreale has discovered that managing information for compliance purposes is not a “store it and forget it” exercise. The value and risk of corporate information have driven him to explore a holistic process known as Information Lifecycle Management.

As detailed in earlier editions of this series, Information Lifecycle Management is not a product but a method of harnessing informational chaos.

There are a number of issues that make a lifecycle approach to regulatory compliance attractive:

- Regulatory compliance mandates that data authenticity and integrity be irrevocable. “Data integrity is key,” says Gerr. “Data must be retained in its original format.” Many regulations, such as HIPAA, require that the data be kept safely, too, making information security an important part of the equation.
- Applications are increasingly interdependent, pulling data sets from neighboring systems. As these interrelationships broaden, compliance at the application level becomes insufficient, making an enterprisewide ILM process necessary.
- Not all information is created equal. With the new regulatory environment, companies must protect the right data longer and recover it faster, and know when to delete it.

LINKING ILM AND COMPLIANCE

For many companies, Information Lifecycle Management offers the best means to manage regulatory compliance issues. Here’s why:

- **Flexibility**—Information Lifecycle Management lets companies flexibly store information and move it around as regulatory needs demand. Take, for example, an audit at a financial services firm that seeks details about a particular trade—information that’s stored as email. IT departments must be able to access that information quickly and relatively easily, and store it with an eye to the flexible nature of its value.
- **Indexed Information**—ILM ensures that companies know exactly what kind of information they have and where it is, making it simple to keep the right data for the right period of time. For companies that deal with a myriad of varying regulations, this is particularly valuable. “We need to keep information for a very long time, but we also need to know when to get rid of it because of legal mandates,” says Morreale. “That’s the value of Information Lifecycle Management.”
- **Classification**—By conducting a data classification and prioritization study, companies can ensure that necessary information is placed in fixed content storage built specifically to ensure its authenticity. Many times that means calling in outside experts. “Information Lifecycle Management consultants are

“We need to keep information for a very long time, but we also need to know when to get rid of it because of legal mandates. That’s the value of Information Lifecycle Management.”

—Daniel Morreale,
CIO of the North
Bronx Healthcare
Network

REGULATORY
COMPLIANCE

part of the storage companies' bench teams," says Gerr. "They have the services and tools that will help an organization classify and value their data, taking a step toward having a fully realized strategy."

- **Right Storage for the Right Information**—Classifying information enables IS executives to create tiered storage that matches the regulatory value of the data with the corresponding price/performance layer of storage. Again, fixed content storage is a frequent choice when it comes to ensuring corporate governance and regulatory compliance.
- **Record Level Access**—Information Lifecycle Management treats data at a very granular level, so CIOs get precisely the data they ask for when they need to access information for regulatory purposes. "Regulations are very specific," says Gerr. "[Regulators] look for compliant records, not volumes of records. A very fine-toothed comb needs to be in hand, and IT caretakers will be required to maintain a deep granularity." For companies facing compliance issues, getting at the information is vital, as is getting it in a timely fashion. They must be able to pull authentic data, and they must be able to get at it fast. "I'm really convinced that recovery time will eventually become part of compliance objectives," he says.
- **Retention and Protection**—ILM means that applying automated policies will ensure that information is kept as long as it needs to be and is deleted afterward. For example, an email archiving application will affix a piece of metadata containing a required retention period to each email, and will automatically delete that email when appropriate. "Automated policies are like a handshake between the application and the infrastructure," says Sanford. "It requires the infrastructure to be application aware, and that's what happens with Information Lifecycle Management."

**KEY ATTRIBUTES FOR AN
OPTIMUM REPOSITORY TO
MEET REGULATORY
COMPLIANCE**

- **Flexibility**
- **Indexed Information**
- **Classification**
- **Right Storage for the Right Information**
- **Record Level Access**
- **Retention and Protection**

In an era of increasingly strict regulations that govern how companies must manage and store information, it's clear that CIOs must take action sooner rather than later. With the possibility of fines and other penalties for noncompliance, companies cannot afford to wait. Instead, CIOs need to implement governance strategies that work across the entire enterprise and manage information holistically.

"Part of a CIO's job is talking about the strategic value of information and teasing out what's real versus what's not real," says Morreale. "You need to understand that information is fluid and constantly adapt it to whatever regulatory changes happen, and for that you really need a big-picture target."

As such, companies must manage this task at a very high level and make sure that their compliance policies are driven by the value of the information first and foremost. For many, Information Lifecycle Management is the one answer that's couched in terms of real business value.

NEXT: *In the next part of this series, we'll look at how Information Lifecycle Management enables new operational efficiencies.*

**QUESTIONS ABOUT
INFORMATION
LIFECYCLE
MANAGEMENT?**

If you've got any burning questions about Information Lifecycle Management—and how you can begin implementing such a strategy—send them to ilm_questions@emc.com. We'll answer the most frequently asked questions later in this series.

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The Resource for
Information Executives

A well-thought-out strategy for change management is critical to the success of any new system. Here's how four organizations reaped big dividends by managing change.

No Small CHANGE

KOLETTE FLY, WHO HELPED DEVELOP PFIZER'S ELECTRONIC

data capture system, knows firsthand that asking people to change the way they work can be as traumatic for some as asking them to bungee-jump off a bridge. An epidemiologist at Pfizer who heads clinical trials for the treatment of metabolic diseases, Fly remembers the first time she sat down with the nurse coordinator of a university hospital that Pfizer wanted to recruit for a new study. As soon as the coordinator saw the computer being pulled out of the box, she held up her hand and announced that computers were the "foot soldiers of the devil."

Fly and an IT person spent the next three days trying to overcome the coordinator's digital fears. They worked closely with her to explain computer basics and how Pfizer's Investigator Net (I-Net) system—an electronic data capture system that automates data collection and analysis for drug development studies—would make her work easier and more efficient. But the coordinator remained unconvinced, to the point where Pfizer was about to



WINNERS IN THIS STORY

Chicago Police Department

Guardian Life Insurance

Pfizer

Procter & Gamble

cut its losses and pull the hospital from the multicenter study. Then, in a grand "aha" moment, the coordinator realized that she could log in and navigate the system by herself without any coaching, and that the system "wasn't out to get her," says

Fly. At that point, her resistance evaporated and she became a convert. The hospital became the top patient recruiter for the program, and the coordinator even volunteered to do road shows to preach the ben-

B Y T O D D D A T Z

PHOTO BY FURNALD/GRAY



Kolette Fly, who heads clinical trials for Pfizer, worked closely with nurses and doctors to sell them on a new electronic data capture system for Pfizer's drug trials.

efits of the system to other sites. "If this old dog can learn this, there's no reason anybody else can't," she told Fly.

Companies can develop or purchase IT systems that promise to cut costs, streamline operations, wash the car and whiten teeth, but CIOs know that if the users don't like a new system, they can kiss the promised value good-bye. That's why change management is so critical to the success of any new system. A well-thought-out strategy—one that's driven by the needs of the business, encourages user input during the development phase, ensures proper training and keeps the lines of communication open at all times—will go a long way toward making those multimillion-dollar technology investments contribute to the bottom line.

The four CIO Enterprise Value Award winners in this story—Pfizer, the Chicago Police Department, Procter & Gamble and Guardian Life Insurance—have devoted plenty of blood, sweat and tears to convincing their users that change is for the better. Here's how having a solid change management strategy has paid off big time for these companies.

WINNING OVER THE RANK AND FILE

Take a grizzled, 50-year-old cop who's been patrolling the streets for decades and has grown quite comfortable filling out five-ply carbon forms to process all his arrests and casework. Then you suddenly order him to start doing his reports on a computer, an alien-looking object he may have never laid a finger on in his life. Indeed, one veteran cop on his first day of system training on a PC picked up the mouse without logging on, pointed it at the screen and started clicking away. When nothing happened, he asked why the damn thing wasn't working.

That's the whopper of a change management task that the Chicago Police Department—the second-largest department in the country with more than 16,000 police officers and civilian employees—faced as it began developing the Grand CIO Enterprise Value Award-winning CLEAR (Citizen Law Enforcement Analysis and Reporting) system, a relational database that sifts through massive amounts of data to

give officers the information they need to fight crime (see "Taking IT to the Street," Page 56).

In fact, when the case report component of the first CLEAR module, a criminal history records information system that also produces arrest reports for detectives, was rolled out in 1999, it was a disaster. The detectives hated it for a number of reasons: It wasn't user-friendly, the process of getting approval from supervisors proved arduous and involved multiple screens, and detectives weren't given proper training. After a year of listening to detectives' grumbling, managers realized they had to do something.

First, they set about building internal competence in the information services group, and that meant replacing more than half of the management team. "It was a good team, but we needed a different set of skills—people who could manage a large-scale enterprise, people with business skills, project managers, development directors who could understand the business needs of our users and manage a team that would build out, and understand the enterprise structure we were building," says Ron Huberman, who became assistant deputy superintendent of information and strategic services for the Chicago Police Department in 2001. After revamping his team, Huberman focused on training his technology staff, from entry-level developers all the way up to senior managers. At that point, the information services group was ready to begin full-fledged development of the new system.

They began by sending a team of their best programmers out to the field for six weeks to document all the issues users had with the system. The group came back with 200 specific requests for changes, ranging from implementing an easier approval process to changing the format of how the reports printed. IS leaders also made it a point to glean user input throughout the development process. They instituted JAD (joint application design) sessions, which involved teams made up of management, users and technical staff. They formed focus groups from all ranks to gather input. Teams of officers went out to the 25 districts to field-test new apps and train officers.

Having officers—not civilians—be the trainers has made a huge difference to the cop on the street.

"There's a certain degree of comfort [with other police officers]," says Sgt. Howard Lodding. He is one of a number of cops from the street who have been brought in to the information and strategic services division as part of the department's change management strat-

CRITICAL SUCCESS FACTORS CHANGE MANAGEMENT

PROMOTE A CLEAR VISION to keep employees focused on how the new system will help the company achieve its long-term goals.

MANAGE THE ENTIRE PORTFOLIO of change—too much simultaneous change within a company can be disastrous.

CONSIDER A PROJECT'S SCALE—things that work well in the pilot phase don't always scale to an enterprisewide or global level.

PUT CONTINGENCY RESOURCES in place: That means extra funding to shore up the inevitable problems that will occur.

TOUGHEN UP YOUR I.T. TEAMS so that they don't take personally the inevitable potshots from angry business users.

egy. A few years ago, there were no officers in the IT shop; now there are 18, and their background in the field helps them design modules in the CLEAR system with users in mind. Their experience also ensures them respect in the field when they train users on the system.

Paul Gaffney, CIO at Staples and an Enterprise Value Awards judge, sums up the monumental task the CPD faced: "I can't imagine a more difficult change environment than an organization like a very old police department. You have longtime employees. They're used to doing things a particular way. They succeeded in not only delivering the right technology but also embracing that technology and unlocking all the value."

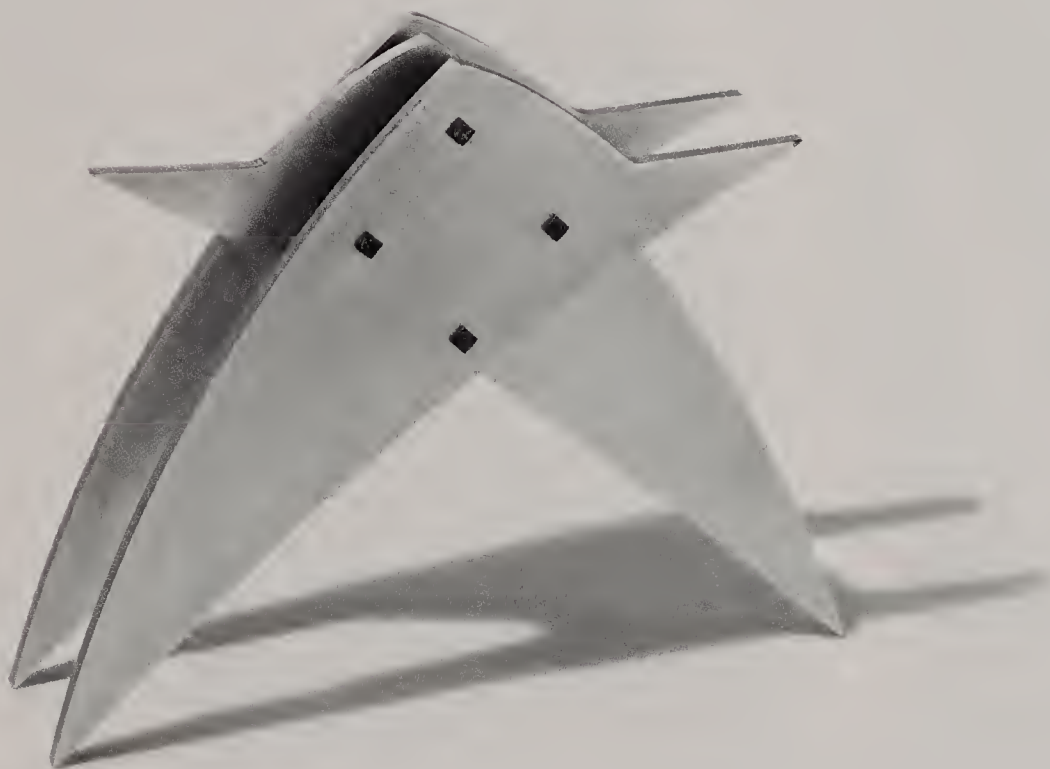
SELLING THE SYSTEM

Though it might not be as dramatic as cops switching from ballpoints to bits, Procter & Gamble still had plenty of user resistance as it rolled out its Corporate Standards System (CSS). CSS is a global, centralized application that manages the company's technical standards around each product. Technical standards are a critical component of the company's product lifecycle management process—they are the communications links that connect everything from R&D to the product supply department for the purchase, manufacture, storage and shipping of materials and products. The beauty care group, for example, has an average of 125 standards for such key information as formulas, regulatory clearances and packaging instructions, and each project identification code or SKU (overall, the company has about 55,000 SKUs in current production). CSS allows the reuse of existing tech standards and lets its more than 8,200 users share data across the globe. (Previously, people had squirreled away that info in any number of places, including three-ring binders, the occasional website and some electronic workflow tools.)

When working on the development of P&G's CSS system, John Planalp, associate director for corporate R&D, wanted input from business units that were grappling with a lot of complexity. In P&G's case, that meant studying the needs of Western Europe, which contains a number of different countries, languages, brands, country-of-sale agreements and artwork. He says that he wanted to make sure the tool could handle such a wide variety of inputs, without designing it in such a way that users in a simple business—say, a brand of kitchen towel in a country with a single language—would struggle with it, or worse, not use it.

The main objective of P&G's project leaders was to show employees how CSS would improve their workflow. They did Web-based training and set up a help desk that follows up on every request from employees. In describing the rollout, Planalp and other execs like to talk about a 60-day immune response from users. That's about how much time it took for

CONGRATULATIONS ...



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Dan Blair, director of worldwide technical standards for Procter & Gamble, says it took about three months for employees to get over their resistance to the new automated system for product standards.

employees to get over their resistance to the new system. After that, says Dan R. Blair, director of worldwide technical standards and the business sponsor of the project, they often became advocates. When people complained about the system being too slow, for instance, employees discovered it usually wasn't the technology but the work process that was the culprit. For example, someone in R&D may have been used to documenting last-minute change requests from a retailer (such as a request from Wal-Mart to change the products on a pallet) on the back of envelope. At first they found that documenting changes in CSS demanded more rigor and was thus more frustrating. After fixing the work process—by, for instance, standardizing the approvals necessary for late change requests—they found that the system made their life easier. “Eighty percent of the

time it's not about the tool, it's about the work process,” says Planalp.

Executives at Guardian Life Insurance had a similar change management challenge when they rolled out a new insurance and annuity policy administration system dubbed Transcend. The system, which replaced an aging legacy system, enables real-time automated annuity policy processing and allows Guardian to connect to third-party broker dealers and build relationships with the brokers and their customer base. According to Executive Vice President and CIO Dennis Callahan, Transcend was successfully deployed with little resistance from internal users. IT executives created the usual menu of workshops and training sessions for users when the new system was launched. But the key, Callahan says, was the partnership between business and IS—there's no battle between the

CIO and any business head for control of the agenda. “People are getting the same message from the top down. That eliminates the tension and simplifies change,” he says.

LEARNING FROM FAILURE

When companies make major changes in the way they do business, they sometimes hit a few bumps before arriving at a smooth patch of road. That's certainly been the case with Big Pharma, where, beginning in the 1980s, pharmaceutical companies tried without much success to implement electronic data capture systems. But now, Pfizer is one of a handful of industry players that are up and running with highly successful EDC systems. Analysts say Pfizer's I-Net is one of the most advanced EDC systems in the industry, with a deployed base of 4,000 users at more than 2,000 investigator sites in 36 countries.

But the change management hurdles were huge. Similar to the Chicago Police Department, internal and external users at Pfizer had to move to an online environment from the tried-and-true paper-based environment they'd been working in since the dawn of drug discovery. Clinical teams were very comfortable with paper case report forms (CRFs), on which patient data, such as demographics and vital signs, was collected and analyzed.

The collection and processing of trial data represents 40 percent of the cost of new drug development and is a gargantuan chunk of money, given that the average cost of developing a new drug is more than \$800 million. One of the obstacles Robert Goodwin, worldwide head of clinical data acquisition and management, and the business champion for Pfizer's I-Net system, faced was overcoming the fears of his R&D folks that the automation and standardization of CRFs would crush their creative abilities. For example, they feared that a standardized report form would hamper their flexibility to collect information while exploring new ways to do medicine. The company got their buy-in by asking for R&D's input on the electronic report forms. Ultimately, 80 percent of these forms became standard, leaving 20 percent to be unique to each study. The new forms

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also led to speedier trials. “We demonstrated that with standardization, we could start studies faster instead of making each CRF a Picasso,” says Goodwin.

Getting internal therapeutic teams to pilot I-Net presented another knotty hurdle. “Everyone else wanted someone else to do it. They were excited about it as long as they weren’t the ones piloting it,” says Fly. Project leaders worked hard to give teams that volunteered an incentive. For example, the team studying estrogen receptors involved in breast cancer became motivated by the challenge of piloting I-Net and selling its benefits to clinical trial sites as well. Once word spread that the piloting teams were finding I-Net easy to use and reliable, other teams began to climb on board.

WOWING EXTERNAL USERS

In addition to its internal research teams, Pfizer needed the cooperation of most of its investigator sites—the more than 2,000 locations in hospitals, private doctors’ offices and universities where trials are run—for I-Net to succeed. Doctors and nurses at these sites had the same concerns as Pfizer’s internal users about moving from pen and paper to electronic CRFs. Not only did many medical professionals distrust computers, but they didn’t have the time to deal with user-unfriendly technology. In fact, one of the biggest sources of user frustration with I-Net in the beginning was the long log-on script. “People didn’t have the patience,” says Fly.

“We visited sites and listened to them. We tried to understand their business processes and how they worked so we weren’t disrupting how they worked,” says Goodwin. One of the seemingly simple, yet stunningly effective ways that I-Net leaders helped the computer-phobic gain confidence was by designing the CRFs (in PDF format) so that they looked like the hard-copy



Guardian Life Insurance CIO Dennis Callahan says the key to successfully launching a policy processing system was ensuring that everyone in the business units and IT shared the same agenda.

CRFs. And though at first they sent technical staff out to sites for training, as users became more comfortable with technology, Pfizer began training for clinical trial sites online.

The enthusiasm of internal users also rubbed off on external users. Goodwin says he and other leaders cultivated business champions—lead clinicians, lead clinical research associates and lead data managers who wanted I-Net for their projects.

Pfizer faced different sets of challenges when implementing I-Net globally. “How do you get laptops into Estonia or India? It’s easy to ship paper; when you ship electronics, there are a whole lot of different import restrictions,” says Anthony Gazikas, worldwide head of development informatics at Pfizer Global Research & Development. Infrastructures in other countries are not always optimal—users need to be convinced that the payoff from using I-Net is worth, say, the creaky 28.8Kbps connection, which may be slower than paper. To support its global users, Pfizer put in place a 24/7 multilingual help desk that supports all trials.

The cultural differences in the way doctors work around the world also need to be taken into consideration. For example, in the United States, I-Net may be programmed with plenty of edit checks—say, if a trial participant weight is entered as 300 pounds, the app might generate a pop-up that asks, Are you sure this is correct? In Japan, however, a doctor might take offense at being questioned by a computer, Goodwin says, so Pfizer is less likely to program edit checks into a Japanese-based system.

Whether introducing new technology to doctors in Japan or cops in Chicago, the change management strategies employed by these four organizations have helped boost the acceptance rate of their systems. It may have worked for Kevin Costner when he constructed his ballpark in an Iowa cornfield, but companies know that if you build it, they don’t always come. In these four cases, users *have* come, and, as a result, the systems have been a solid hit. **CIO**

Send feedback to Senior Editor Todd Datz at tdatz@cio.com.

Talk to Ron Huberman

Director of IT at the Chicago Police Department, Ron Huberman has helped make CLEAR happen. To find out how he did it, **ASK THE SOURCE**.

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IT SERVICES AND SOFTWARE ENTERPRISE NETWORKING AND COMPUTING SEMICONDUCTORS IMAGING AND DISPLAYS

Four winning companies demonstrate the true value of integration by achieving a single view of their customers and their data, saving time and money along the way

They Got It TOGETHER

B Y L A F E L O W

WHERE THERE IS A SUCCESSFUL AND EFFICIENT

integration strategy, there is enterprise value. A well-executed integration initiative can provide a singular lens into the business and the customer, speed time to market, consolidate systems and processes, and save time and, ultimately, costs. At its very essence, integration generates value.

Four of this year's CIO Enterprise Value Award winners have done exemplary work developing systems that drive their integration initiatives while creating value for their organizations. Their efforts to integrate systems and business processes



WINNERS IN THIS STORY

Academic Management Services

Dell

Procter & Gamble

Worldspan

have generated results because they were influenced by both business objectives and technological realities. The winning organizations come from different industries at dramatically different levels of scale—including

global consumer packaged-goods manufacturer Procter & Gamble, computer manufacturer Dell, travel technology provider Worldspan and Academic Management Services (AMS), a 500-employee academic loan purveyor.

In creating its winning system, P&G took on the huge task of cataloging its thousands of technical standards to expedite R&D. Dell developed an internal sales tool that provides its agents with more complete product information to help close sales. Worldspan consolidated databases for more efficient delivery of its services. And, finally, AMS condensed the Web-based views of several loan systems into a single interface, thereby empowering its loan officers to present customers with more comprehensive options and even helping the company enter a new line of business.

PHOTO BY DANNY TURNER



The Integrated Dell Desktop has helped sales agents handle more calls in the same amount of time and, most important, close more sales, say Dell CIO Randy Mott and Susan Sheskey, vice president of sales, marketing, services and Dell IT.

Despite the differences in the winners' sizes and industries, when pursuing an integration strategy that would generate value, these CIOs and their respective business sponsors shared similar goals, followed similar approaches and enjoyed similar outcomes. Here we present the four companies that have mastered the art of integration with their Enterprise Value Award-winning systems.

CRITICAL SUCCESS FACTORS INTEGRATION

PROVIDE A SINGLE POINT of access to customer data to save the time and expense of cross-referencing or maintaining multiple databases.

FOSTER A CULTURE of integration from the top down by thinking of all IT projects in terms of how they will integrate with existing systems.

DON'T JUST INTEGRATE systems—reengineer processes for maximum efficiency and develop systems that support those processes.

A SINGULAR VIEW ON VALUE

For most companies, achieving a single view of the customer is the ultimate goal of their integration struggles. A single view translates to significant value through the time and expense saved by not having to cross-reference or maintain multiple databases and by being able to respond to customer inquiries in a timely manner. "Many companies have pockets of information relative to their customers," explains AMS CIO John Mariano. "The more that's integrated and the more business intelligence you can gain from that, the more you are able to deliver value across the company."

That was certainly the case for Worldspan. The company's 2,700 employees provide technology services for travel agencies worldwide. Worldspan used to maintain more than 50 databases for salesmen, customers and equipment inventories. The company's LINK system has enabled it to aggregate those databases into one, which helps salesmen address the precise needs of their customers at the time

of a transaction. "We could never keep the databases in sync," says CIO Sue Powers, who is also senior vice president for the company's Worldwide Product Solutions division. "The customer often had the impression that we didn't know what we were doing, and in many cases, they were right." When a travel agent was opening or moving to a new location, often something would be unworkable on opening day, whether it be phone connections, software or hardware.

The primary reason for developing LINK was to bring these disparate databases together and to achieve that single view, says Powers—something none of Worldspan's competitors such as Amadeus, Galileo and Sabre have done. "Our whole goal and philosophy was to have a single source and view of our customer that all other applications interface to," Powers says. The call center, global procurement, billing and all customer-connected applications interact with and extract data from the same customer database, giving Worldspan employees access to the same information.

Dell, renowned for its supply chain efficiency and direct sales model, has also benefited from a system that provides sales agents with a single source of its most current product data, as well as a cross-channel view of customer interactions. Dell's direct sales come through a variety of channels—catalogs, telephone inquiries and, of course, the Web. In addition, many of Dell's customers start configuring their systems over the Web, then call in with compatibility and availability questions. This multichannel approach had Dell's sales agents bouncing across multiple systems to get a complete picture of both the customers' needs and Dell's product line. The Integrated Dell Desktop (IDD) has made life easier and more productive for Dell's sales agents by giving them single views of both their customers' preferences and available system options.

Now, instead of switching between call center systems and online systems, the IDD provides agents with one view of their customers' configuration preferences regardless of the sales channel through which they initiated an

order. Equally important, they also have a single view to all current product specs and no longer have to switch between the multiple systems upon which that information was previously stored, which speeds query resolution. Now sales agents can focus on quickly and accurately resolving queries. "To the degree that we can keep it a simple, straightforward process, both for folks using the tool inside and for our customers, that's when integration [delivers] the primary benefits for us," says Dell Senior Vice President and CIO Randy Mott.

Such a "channel agnostic" approach has helped Dell's sales agents handle more calls in the same amount of time and, most important, close more sales. It has also reduced training time and helps Dell get its new sales agents up to speed more quickly because the IDD uses a simple, familiar interface that is virtually identical to what the customer sees on Dell's website. Integrating the channel views within an easy-to-use interface was key to the design of the IDD, says Susan Sheskey, vice president of sales, marketing, services and Dell IT. "We gave our sales agents a tool that incorporated the same look, feel and capabilities that our customers see when they visit Dell.com," adds Sheskey, who oversees both Dell's internal sales efforts and the IT that supports those efforts. "As a result, our agents can more effectively relate to the customer experience."

TIME-SAVERS

Doing business faster and more efficiently is another primary goal of integration. Bringing together processes and disparate systems through a single, integrated platform saves companies time, provides new opportunities and creates more efficient operations. Academic Management Services

Talk to Sue Powers

Have you tried to integrate databases? Got plans to? Share your tribulations or your questions with CIO Sue Powers, who headed up Worldspan's ambitious and award-winning consolidation effort. To **ASK THE SOURCE**, submit your questions online by Feb. 29. Go to www.cio.com/experts.

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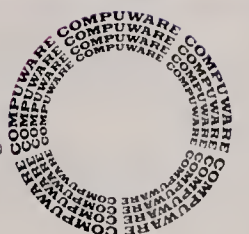
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(which was recently acquired by Sallie Mae, or SLM Corp.) has experienced all three of those benefits since developing its Integrated Counseling and Enrollment (ICE) system.

AMS loan counselors work with clients over the phone to determine an academic loan program (for higher education or private schools) that best matches their needs and overall financial picture. Prior to using the ICE system, these interactions required counselors to switch between six separate systems that provided access to and housed information about certain categories of loans. When it developed the new system, AMS consolidated these six systems into one, the single ICE portal.

The consolidation greatly increased the efficiency of the loan counselors as they were able to describe, recommend and approve the loan package that best matched the families' needs. AMS's loan agents now handle 1 million outbound and 300,000 inbound calls annually—90 percent more calls than they did prior to ICE. This increase in call volume is due to each counselor's increased efficiency as well as the system's ability to accommodate more counselors. Once a family's complete financial profile has been entered into ICE, loan consultants can even authorize loans within the system, often while the potential customer is on the phone. The ability to approve a loan in this manner can reduce the waiting period for individual families and helps AMS loan counselors handle more calls.

Just as AMS loan officers have been able to work with customers more efficiently, so have Dell's internal sales agents. Prior to deploying IDD, Dell agents would have to check as many as 40 separate online and offline sources for complete product and service information. The IDD system gives them a single point of access to that information. In addition, because agents now share the same view as their online customers, they are better equipped to help them through the process of configuring their new computer because they can guide them throughout the configuration screens. The Dell sales agent sees the same screens as the customer sees.

Another capability engendered by the IDD is "cart sharing," where sales agents can view

shopping carts created by customers through online or call center inquiries to expedite configurations and ultimately close sales. Dell's sales agents can access customer carts to check order configurations, recommend changes and finalize system orders. Since customers no longer have to repeat information they may have already entered through the website, the average length of each call has been improved by 10 percent and the sales close rate by 0.2 percent to 0.5 percent.

New sales agents get up to cruising altitude more quickly with the IDD system as well. The system has reduced training time for new agents by 45 percent, and improved ramp time—the time it takes new agents to perform comparable to their peers—by 25 percent. "Integration

comes in the form of efficiency and streamlining in terms of how quickly can someone learn the new system and then how quickly can we take care of our customers," says Mott.

To streamline its processes, Procter & Gamble took on the colossal task of cataloging technical standards for all its products, and packaging and storing them in a single database called the Corporate Standards System (CSS). This rightfully sounds like a monstrous task, especially given the 300 global brands the company produces, but consider this: The formula card (which equates to a list of ingredients or instructions) for a single size and fragrance of one Olay product defines technical standards for 30 raw material specifications, 20 test methods, three packaging



Academic Management Services has consolidated six disparate systems into a single integrated platform, thereby affording new opportunities and creating efficient operations. "We have cut our IT expenses since 2000 by approximately 40 percent," says CIO John Mariano.

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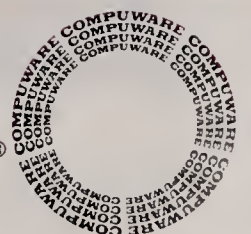
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standards, eight packaging material standards, four artwork standards, the manufacturing instructions, one quality acceptance criteria, one process standard, two additional formula cards linked to the same packaging standard and 15 substitute ingredient standards for producing the product in different locations. That's a lot of data for a single product.

For P&G researchers, who need constant access to such standards, a single, consolidated source speeds their work considerably. It also facilitates reuse of technical standards that have already been defined, again saving R&D time. For example, a researcher in one facility may have already defined a technical

standard for a shampoo colorant, while another researcher may be working on a similar product or a product that may interact with that brand of shampoo. The second researcher can reuse the colorant's technical standard and know precisely how that ingredient is formulated and how it will interact with other ingredients.

The CSS, now in phase two, was fully deployed to all 8,200 P&G users in October 2002. Phase two focuses on creating more structured data from the company's technical standards to ensure that it can provide data upstream and downstream of CSS. Technical standards for any new product, whether developed in-house or as part of an acquisi-

tion, will be fully cataloged and defined in the CSS. Maintaining precision and consistency among these standards is critical in heavily regulated industries such as pharmaceutical and health and beauty care products, where ingredients and their proportions must be exact. "Seventy percent of P&G is governed by some kind of regulation," says Nancy Demoret, associate director for IT in P&G's Global Applications R&D.

COST SAVINGS

Pursuing the goal of integration helps an organization define more efficient business processes, which certainly saves time and effort. It also helps with cost savings, including those gained from consolidating and shutting down redundant systems and reducing headcount, and by setting up more streamlined operations.

The huge volumes of technical standard data cataloged by P&G in its CSS were formerly stored in 30 separate data repositories, making information-sharing among researchers nearly impossible. It also resulted in inefficient and expensive materials acquisition. "We had 12 different definitions for blue dye, yet we were going to the exact same supplier for the exact same blue dye, filling 12 different orders for blue dye at 12 different prices," says Geoff A. Smith, director of IT in P&G's Global Applications division.

Now that everything is in one place, P&G can get a handle on its materials acquisition and leverage its scale for efficient purchasing. Much of the true financial value of CSS is in the cost savings from more direct and efficient materials acquisition and increasing the speed of the discovery phase of any new product or formulation.

At Dell, the level of discipline and rigor it has applied to its IDD system has helped the company reap impressive financial benefits far beyond its initial expectations. The original business case for developing the IDD system indicated a four to eight times return on investment. Actual figures are tracking at anywhere from six to 16 times return, according to Marketing Manager Carlos Negrete. In addition, by using the same interface and standards-



P&G's Corporate Standards System is crucial to the company's ability to maintain precision and consistency among standards, says Nancy Demoret, associate director for IT in P&G's Global Applications R&D.

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"Prior to LINK, we could never keep the databases in sync," rhymes Worldspan CIO Sue Powers. The system has enabled Worldspan to aggregate 50 databases into one, which helps salesmen better serve their customers.

based tools for the IDD that drive its customer-facing website, Dell has experienced cost savings through streamlined development and reduced training costs.

AMS has also saved on licensing and maintenance fees by consolidating and integrating both its systems and processes. "At one time, we had four separate installs of Oracle," says CIO Mariano. "Now we've consolidated to one. It has cut our IT expenses since 2000 by approximately 40 percent."

In the same vein, Worldspan has saved money through consolidation of both staff and technology. Once the LINK system was up and running, the company was able to sunset, or retire, noncompliant applications, generating significant savings on maintenance and licens-

ing costs. As it developed the system, the company also reengineered many of its business processes, consolidating them within a single procurement group. In that way, Worldspan also saved costs by reducing staff, most notably in provisioning—where Worldspan sets up travel agents across the globe with the equipment they need to do business. "It's a very complex process involving shipping equipment, provisioning telecom lines, updating the database, and it all has to come together magically on the same day," says Powers.

The consolidated information available through the LINK system ensures that Worldspan gets it right when provisioning a new agent or an agent who has moved or expanded operations. "You can imagine the

frustration a customer has when an agent moves their office and the needed equipment doesn't come together," she says.

Financial value comes not only from cost savings but also new opportunities. The ICE system helped AMS enter a new line of business—consolidation loans—in which borrowers can consolidate numerous education loans into a single, lower interest loan. These types of loans now account for nearly 25 percent of AMS's revenue. "They've created a new market ability, created more reliable partnerships with universities and did it all for \$311,500," says Paul Gaffney, executive vice president and CIO of Staples and a member of the Enterprise Value Awards judging panel. "They're the poster child for IT value."

A CULTURE OF INTEGRATION

All organizations struggle with integration in some fashion at some point. Our Enterprise Value Award winners are proof that significant value lies within a well-executed integration initiative. Starting those initiatives comes easier when a company adopts a pervasive attitude of integration, as Worldspan did. "We won't do any system unless it is integrated into existing systems," says Powers.

The IT group can often be the catalyst for promoting a sensible culture of integration throughout an organization. "IT has the broadest view of any company's enterprise," says P&G's Smith. "We see across common activities and lines of business. We can be the conscience of the company. When we see something ridiculously inefficient, we have to get the leaders in each line of business rowing in the same direction."

By following well-defined integration initiatives, and deploying systems that helped generate significant financial value and promoted efficient business processes, these Enterprise Value Award-winning companies have clearly demonstrated that the paths to both integration and enterprise value are closely intertwined. **cio**

Features Editor Lafe Low can be reached via e-mail at lflow@cio.com.

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Tackling CRM is a huge challenge for companies across all industries. Here's how four of this year's CIO Enterprise Value Award winners are able to gather and mine customer data for real value.

WOULDN'T IT BE NICE IF JUST ONCE, ONE OF THOSE SURLY

airline employees offered a sincere and unequivocal apology for losing your luggage or for a delayed flight? If you fly first class with Continental Airlines, you may finally get that apology.

Since 2001, the Houston-based carrier has been enhancing the in-flight reports it provides to flight attendants just before takeoff with more detailed information on passengers. For example, in addition to indicating which passengers ordered special meals, the expanded reports flag the airline's high-value customers and detail such things as whether they've had their luggage lost in the recent past or experienced a delayed flight. Armed with this information, flight attendants can now approach these customers during the flight to apologize for the inconveniences. Such high-touch, personalized service increases customer loyalty, particularly among Continental's most valuable patrons, and that loyalty in turn drives revenue. Continental breaks customers into different levels

Getting to

of profitability: Since building its new system, the airline reports earning an average of \$200 in revenue on each of its 400,000 valuable customers, and an additional \$800 in revenue from each of the 35,000 customers it places in its most profitable tier—all because it accords them better service.

Since the mid-1990s, companies have been trying to make their enterprise and customer data pay off. They know this data has value, but they don't know how to effectively extract it. In their mining efforts, companies have built huge

data warehouses, sunk millions of dollars into CRM systems and endured painful change management initiatives—often with lackluster results. Four of this year's corps of Enterprise Value Award winners, however, have found ways to exploit customer and enterprise data to their advantage. Academic Management

Services (AMS), a provider of student loans that was acquired by Sallie Mae in November 2003, was able to expand its business in early 2001 into the lucrative loan consolidation market by developing an interface to its various customer



WINNERS IN THIS STORY

Academic Management Services

Ace Hardware

Continental Airlines

Korn/Ferry International

A man with short dark hair, wearing a dark suit jacket over a light-colored shirt, is sitting on a red wall. He is looking towards the camera with a slight smile. The background is dark and out of focus, showing some architectural elements.

KNOW THEM

BY MERIDITH LEVINSON

Mike Altendorf, Ace Hardware's vice president of IT, says that a data warehouse containing information on competitors' prices and promotions has allowed Ace retailers to optimize their pricing structures and increase profitability.

and product information systems. Executive recruitment company Korn/Ferry International bolstered its management assessment business, which specializes in evaluating executive talent, and its executive search business by creating a system that automates the company's esoteric process for gauging an executive's or manager's leadership capabilities. Both Continental Airlines and retail cooperative Ace Hardware built enterprise data warehouses (EDWs) that have helped them boost customer loyalty through more effective target marketing campaigns and profitability through more powerful pricing structures.

The stakes for each of these companies' success in building systems were high: Both Ace and Continental spent multimillions to build their data warehouses. Korn/Ferry risked losing credibility in the marketplace, as well as market share, if its automated system for evaluating executive talent didn't work effectively because it had put so much importance on the system. And even though AMS made an initial investment of only \$311,500 to build its CRM interface, known as the ICE (Integrated Counseling and Enrollment) system, it was spending much more to build a call center that fully depended on this application. These companies' investments succeeded because they first analyzed their business needs and goals, reengineered existing business processes to take advantage of the data they were capturing, and put technology in place that's both easy to use and supports the needs of users as well as the company's business objectives. And they haven't forgotten that it's the customer-facing employee who can make all the difference in whether or not a customer feels well served—and that no technology, however superior, can make up for that human touch.

ANALYZE THE BUSINESS NEEDS

All of these companies' efforts to extract value from their customer data were supported by strategic corporate initiatives. They first identified a business need, and then developed their systems.

Ace Hardware recognized that to compete with big box stores such as Home Depot and Lowe's and with other cooperatives such as

TruServ and Do it Best, it would have to become more retail and customer focused. Since the Oak Brook, Ill.-based company's inception in 1924 until the early 1990s, Ace had primarily functioned as a wholesaler—buying merchandise in volume and redistributing it to its 5,000 independent stores. Because the company was so focused on the wholesale side of the business, it didn't have much of a view into its retail operations. Ace saw a data warehouse as a way to collect and

CRITICAL SUCCESS FACTORS CUSTOMER DATA

ENSURE that all systems and processes are created to address specific business needs. For example, an airline developed a data warehouse to mine information, which it used to build customer loyalty.

COMMUNICATE the value of customer data and explain to staff the opportunities it represents for increased revenue and improved customer service.

KEEP CRM technology invisible, and preserve the human touch—don't let the technology come between customer-facing employees and customers.

analyze point-of-sale (POS) data from stores that elected to share it. The challenge the company faced was in convincing its co-op members to share their POS information. (For details on how Ace convinced its retailers to share their data, see "Catching Flies with Honey," www.cio.com/printlinks.)

At AMS, corporate executives monitoring falling interest rates in 2000 saw an opportunity to expand the company's market share by entering the loan consolidation market. The company needed a way to identify prospective candidates for loan consolidation among its existing customers, and needed to build a call-servicing system to help support the new business. AMS CIO John Mariano and his two developers set out to create an interface to six internal and external systems that call center agents could access in order to serve

consolidation customers. ICE helps loan servicing agents act on leads indicating which borrowers in the company's Perkins Loan servicing system might be ripe for loan consolidation. "Rather than buying leads on the open market, we mined our internal data to generate our own leads," says Mariano.

In the executive recruitment space, Korn/Ferry knew its competitive advantage would come from expanding its service offerings beyond just executive search programs into more consultative, human-capital management services such as conducting management assessments—evaluations of the leadership and professional abilities of managers and executives. The company already had a strategic management assessment practice in place when it began developing its winning system, but the process it used for evaluating an individual's or management team's performance was arcane and paper-based. Even though the process for conducting management assessments was cumbersome, Korn/Ferry was confident that it could be a competitive advantage; it just had to find a way to make the process easier to execute on a mass scale. Korn/Ferry Senior Vice President and CIO Dan Demeter created an Internet-based solution that automates the assessment process. Now consultants in the management assessment practice can easily send evaluations to clients via e-mail, and quickly and easily tabulate and interpret the results of these evaluations using the Management Assessment System.

Continental's desire to improve its ranking in a competitive industry drove it to build a real-time EDW. When the EDW was first being developed in 1998, its initial purpose was to bring data from some 27 systems together so that the company could more accurately forecast revenue. Since then, the company has used it to determine if customer loyalty initiatives really affect revenue. By testing a sample of 30,000 customers who experienced delays, Continental found that those individuals to whom the airline sent a letter of apology and some sort of compensation (either in the form of a free cocktail on their next flight or extra frequent flier miles) forgot the event and didn't

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Korn/Ferry Senior Vice President and CIO Dan Demeter created an Internet-based solution that automates the management assessment process, making it easier to evaluate and tabulate information on executive recruitment.

hold a grudge. In fact, Continental says that revenue from those passengers who received letters jumped 8 percent.

With their strategic objectives in mind, these companies then proceeded to identify the existing business processes that they'd need to change, and to develop new ones in order to better exploit their customer and enterprise data.

IDENTIFY THE CUSTOMER NEEDS

To get value out of your back-end data, you have to clearly explain to employees how they can use the information and how it will make their jobs easier.

When members of Continental's data warehousing staff first approached gate agents with freshly minted info on the company's most valuable customers, the airport staffers didn't understand how they could use this information, and the data warehousing staff didn't know what to tell them. So after doing some research, the data warehousing staff went back to the drawing board armed

with new insights about the work the gate agents do and the pressures they're under.

Using operational and customer data in the EDW, the data warehousing team developed a solution to one of the biggest headaches gate agents face: accommodating passengers inconvenienced by a cancellation or delay. The team created a program that automates the rebooking process. Before the program was developed, gate agents had to figure out on their own how to reroute passengers. Now, when a cancellation or delay occurs, the system does the work for them. For example, when the system identifies a high-value customer whose flight has been cancelled, the gate agent may decide to put that traveler on a competitor's flight just to make the individual happy and to get him on his way as fast as possible.

Currently, Continental is trying to use customer and operational data in the EDW to come up with a way for flight attendants to get information about baggage that's been mislaid and to inform passengers while they're still on the plane

that their luggage has gone astray. The airline thinks being proactive will mitigate passengers' annoyance over their bags being lost. If flight attendants have a way to tell an individual not to bother going to baggage claim and to take the person's address so that Continental can send her suitcase when it arrives, the airline will save that person the time and frustration associated with filing a claim for lost luggage.

"Before the data warehouse, the person who yelled the loudest got the best service. Now our most valuable customers get the best service," says Alicia Acebo, Continental's data warehousing director. That strategy is helping the company narrow its losses during a period of great instability in the airline industry.

To boost compliance of Korn/Ferry's new recruitment process, Gary Hourihan, president of the strategic management assessment business, spent one day in 28 of Korn/Ferry's offices around the world selling the search partners on the value of the new Management Assessment System. Several of the senior associates in each office got certified in using the system so that they could help search partners with their executive recruitment research—or just do it for them.

REAP THE REWARDS

Ace, AMS, Continental and Korn/Ferry have harvested real value from their systems. Because Ace's EDW contains information on competitors' prices, regional prices and promotions, Ace has been able to optimize its pricing structures to increase profitability. Mike Altendorf, Ace's vice president of information technology, says that in 2001, sales revenue increased 90 percent across the 1,500 stores that changed their pricing structures in two product areas according to a price analysis done in the EDW. With the data warehouse, the company can now show retailers that are reluctant to increase their prices why they can do so for certain products without losing sales volume, or decrease the prices of other items and still prompt enough sales volume to more than compensate for the lowered cost.

Ace also uses its EDW to identify specific customers for target mailings. For example, a month or two before homeowners think

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about lawn care, Ace sends a promotion for fertilizer to individuals who've purchased Miracle-Gro or similar products from an Ace store in the past. Ace's goal is to ensure its stores are the first that come to customers' minds when the time finally comes to groom the lawn. By zeroing in on customers who've bought fertilizer in the past, Ace weeds out families that subscribe to lawn care services like ChemLawn. And because this type of campaign is better targeted, fewer promotional announcements are mailed out, which saves money on the cost of the campaign.

Altendorf says the response rates for Ace's marketing campaigns run between 6 percent and 20 percent. The average response rate for a target marketing campaign is between 2 percent and 3 percent, according to industry averages. In 2002, the average number of visits per store from customers who are members of Ace's Helpful Hardware Club increased on average by 5 percent, and total gross sales per store increased on average by 12 percent because of these campaigns.

At AMS, CIO Mariano's development staff wrote a software program separate from ICE that finds leads on potential loan consolidation candidates in the company's Perkins Loan

servicing system, and automatically pushes those leads out to loan servicing personnel. The personnel then use ICE to counsel individual borrowers and families on the types of loans that are best suited to their needs, and to call on candidates identified by the software program Mariano's staff created as ripe for consolidation. Because of ICE, AMS saw a 50 percent increase in loan growth from 2001 to 2002, and a more than 230 percent increase in loan growth from 2002 to 2003.

The cornerstone of Korn/Ferry's Management Assessment System is a database containing information on some 700,000 executives who've taken a management assessment test with Korn/Ferry, and the results of those assessments. Consultants in the management assessment practice use these results and aggregated information on the executives in the database to create best-in-class profiles of different job functions, such as CEO, CFO or vice president of marketing. Employees in the management assessment practice match up individuals' assessments with the best-in-class job profiles to see how each person measures up. Revenue from management assessment engagements increased more than 50 percent in Korn/Ferry's fiscal

Talk to Alicia Acebo and Mike Altendorf

Continental Airlines' Alicia Acebo and Ace Hardware's Mike Altendorf were in the thick of things when their organizations developed enterprise data warehouse systems that gave greater insight into customers. Want to know more? **ASK THE SOURCE.** Post your questions online before Feb. 29. Go to www.cio.com/experts.

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year 2002 over the previous fiscal year. Because of the Management Assessment System, Korn/Ferry is generating \$10 million out of its assessment business and is aiming to generate \$50 million in a few years.

AND DON'T FORGET THE HUMAN TOUCH

What unites all of these companies—besides their successful exploitation of customer and enterprise data—is their desire to achieve their business goals by continually honing the service they provide. Nothing works better to convey that commitment to service than a company's customer-facing employees. The winning systems described in this story help employees fulfill their service mission with confidence and ease, but it's important to remember that the customer doesn't see the EDW or the Web-based call servicing system or Management Assessment System. They see the recruiter who's genuinely serious about finding them the best CFO possible; they hear the loan servicing counselor who helps them understand which loans are best for them; they encounter the Ace clerk who's eager to help them select the best paint for their home; they see the flight attendant who offers to help them stow their bags in the overhead compartment. It's ultimately up to the customer-facing employee to make the difference in each and every interaction—with the help of a well-thought-out business strategy bolstered by the appropriate technology. As Continental's Acebo puts it, "If you're flying on a plane and the flight attendant treats you badly, there's no computer system that can make up for that." **CIO**

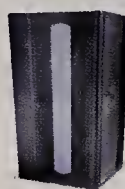
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Alicia Acebo, Continental's data warehousing director, says that the company's new strategy is helping it improve service to its most valuable customers.





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where a CIO peer group of judges selected the best of the best for the Grand CIO Enterprise Value Award.

ROUND ONE: BEST IN CLASS

Starting in spring 2003, teams of CIO editors and Enterprise Value review board members—researchers, consultants and former CIOs—took charge of the industry categories and evaluated 150 applicants. In several of the industries, such as financial services, a who's who of big names shared the list with smaller companies. A handful demanded consideration in each industry by demonstrating significant, core enterprise value. To choose a single winner in each industry, the review board and editor teams conducted a series of teleconferences to clarify and verify the IT systems' data. Their interviews with IT leaders, business

B Y R I C H A R D P A S T O R E



THE JUDGES

FROM LEFT: André Spatz, CIO, Unicef; Rebecca Rhoads, VP and CIO, Raytheon; John Glaser, VP and CIO, Partners HealthCare System; Paul Gaffney, executive VP and CIO, Staples, in Boston at the Nov. 11 judging.

sponsors, end users, customers and third-party industry experts stretched through the summer.

"The review board members are trained researchers, have seen quite a few systems and applications, and as a result, they ask the tough questions to really find out about the enterprise value the applicant is getting from the system," says Richard W. Swanborg, Awards cochair and president and founder of research group ICEX.

Weighing the evidence, the teams made their choices in September, selecting one organization from each of 10 industry categories to take home a CIO Enterprise Value Award. Interestingly, in a number of industries, including the aforementioned financial services, it was a little guy who garnered the prize, beating out Fortune 500 titans.

"The natural tendency would be to think that the largest of the companies would have the most interesting and highest value technology," notes Sheila Smith, review board member and managing partner of Omega Point Consulting. "But in fact, some of the smaller companies were actually doing very innovative things and providing more value, relatively speaking, for their enterprise."

ROUND TWO: PEER REVIEW

Next, it was up to the review board to convey each winner's passion to a panel of CIO judges. Their task was to pick one organization to win the Grand CIO Enterprise Value Award.

Sequestered in a Boston hotel conference room on Nov. 11, 2003, the four CIO judges

listened to review board members present the details, strengths and ROI of the 10 industry winners' systems. Awards Cochair Abbie Lundberg, editor in chief of *CIO*, clarified questions of criteria and made sure the judges observed the ground rules. The CIOs rated the companies' systems in five areas of impact: strategic, customer, financial, operational and social. Lundberg steered the judges away from speculation, asking that they consider only the enterprise value that already had been secured, not what the enterprise might (or might not) realize down the road. She also settled an unusual quandary when the judges identified value that had been overlooked by one of the industry winners. Should they credit the company with this value or consider only what the company identified in its applica-



THE REVIEW BOARD

FROM LEFT:

Richard Swanborg, cochair, CIO Enterprise Value Awards, and president and founder, ICEX

Madeline Weiss, president, Weiss Associates

Doug Barker, CEO, Barker & Scott Consulting

Sheila Smith, managing partner, Omega Point Consulting

Susan Cramm, president, Valuedance

Kathleen Curley, research professor, Information Systems Department, Boston University School of Management

Bob Reck, president and cofounder, Kendall Consulting Group

Not pictured:
Jim McGee, director, Huron Consulting Group

tion? Lundberg decided that the judges should base their decision on only what had been identified in the application. (A company that can't recognize value is unlikely to realize it.)

THE GRAND PRIZE

The 2004 Grand CIO Enterprise Value Award winner—the Chicago Police Department, which had won in the government category—quickly emerged as the judges' top choice, scoring high marks across several areas of impact. "It was an example of exemplary change management and value creation along all dimensions that we were looking at," says André Spatz, awards judge and CIO of Unicef.

The CPD's change management challenge also counted heavily with judge Rebecca R. Rhoads, vice president and CIO of Raytheon. "The change management work that was done

there was phenomenal," she says. "And it reminds us all that at the end of the day, the enterprise value is going to come from effective change management."

The Chicago Police as well as the other nine industry winners prevailed after a rigorous vetting process. "It's a remarkable accomplishment, and the organizations should be proud," says judge John Glaser, vice president and CIO of Partners HealthCare System and a former award winner himself. Adds Spatz, a recent CIO 100 Award winner, "It's motivating and exciting for the IT organization and the company to be recognized by peers and by the IT industry. It creates a lot of goodwill, and it shows that the IT organization is performing in a different league." **CIO**



Send feedback via e-mail to Editor Richard Pastore at pastore@cio.com.

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And the WINNERS ARE...



Ron Huberman



Barbara McDonald



**GRAND CIO ENTERPRISE
VALUE AWARD WINNER**

CHICAGO POLICE DEPARTMENT

Government

Chicago

www.cityofchicago.org

Revenue: NA

Employees: 16,600 sworn officers
and civilian employees

Winning system: The Citizen Law Enforcement Analysis and Reporting (CLEAR) relational database contains 8.5 million arrest records. By querying CLEAR data, Chicago Police more effectively and efficiently solve, predict and prevent crime.

Winning strategy: Ensured user participation in development and testing; received consistent support from top management

System anatomy: Oracle 9i relational database; SQL query and Crystal reporting tools; Sun SunFire database and Internet application servers; Sun StorEdge Disk Array storage area network; removable MicroSlate notebooks for police cars

Business value: CLEAR has helped police increase Chicago's crime-solving rate by 11 percent, created time savings (193 full-time equivalents annually) by automating core tasks, and enabled integrated crime fighting with 225 other law enforcement agencies.

Initial investment and maintenance: \$40 million to date funded jointly by Chicago and partner Oracle; Oracle licensing fees of \$550,000 for the first five years and \$288,000 for subsequent years

IT executive: Ron Huberman, assistant deputy superintendent, information and strategic services

Business sponsors: Philip J. Cline, superintendent of police; Barbara McDonald, deputy superintendent of administrative services

ACADEMIC MANAGEMENT SERVICES CORP.

Banking/brokerage

Swansea, Mass.

www.amsweb.com

Revenue: \$1.4 billion loan portfolio

Employees: 500

Winning system: Integrated Counseling and Enrollment (ICE) is a Web portal that provides academic loan counselors with integrated access to several internal and external systems, helping them match the right loan products to a family's financial needs. ICE gives counselors



John Mariano

the ability to create and track their own accounts. The system also enabled AMS to enter the loan consolidation market.

Winning strategy: Executed in-house what AMS does best (programming); outsourced what it doesn't do best (user interface design)

System anatomy: Hewlett-Packard eight-way N Class platform running Oracle's relational DBMS, and Dell and Sun servers; XML; Java; Web services

Business value: In its first year of operation, ICE enabled AMS to grow its consolidated loan portfolio to a \$175 million business and cut the time to process loan applications from 50 days to five days.

Initial investment and maintenance: \$311,500 for development; \$124,600 for annual maintenance

IT executive: John Mariano, CIO

Business sponsors: Claudia Schutz, senior vice president of customer services (retired); Suzanne Reynolds, former manager of loan customer service

ACE HARDWARE CORP.

Retail/wholesale

Oak Brook, Ill.

www.acehardware.com

Sales: \$3 billion wholesale; \$13 billion retail

Employees: 5,000

Winning system: Ace's enterprise data warehouse fueled expansion of its customer loyalty program from 1 million members to 5 million. Ace leverages this customer data to plan more effective marketing campaigns, improve category management and set prices to optimize profitability.

Winning strategy: Ran target marketing campaign to prove system's value to the cooperative's 5,000 independent retailers and gain their participation

System anatomy: NCR server; Teradata data warehouse; Teradata, MicroStrategy and Informatica database tools; PowerConnect data integration platform

Business value: Ace attributes a 55 percent increase in gross retail sales in 2001 to category management improvements and a 90 percent revenue increase in two product lines to revised pricing structures enabled by the system. Ace has also observed an 80 percent increase in gross sales for stores that participate in Ace's Helpful Hardware Club loyalty program.



John Venhuizen (left) and Mike Altendorf

Initial investment and maintenance: \$2.5 million for hardware, software and labor costs in 2001; \$3.3 million for server rental, hardware maintenance, additional software and labor in 2002

IT executive: Mike Altendorf, vice president of IT

Business sponsor: John Venhuizen, marketing manager

CONTINENTAL AIRLINES INC.

Transportation

Houston

www.continental.com

Revenue: \$8.4 billion

Employees: 48,000

Winning system: Continental's enterprise data warehouse allows the airline to optimize revenue for each flight, target customer service improvements for its best customers and increase customer loyalty. The system also helps prevent fraud by identifying the same passenger booked on different flights and differentiating similar passenger profiles on the same flights.



Alicia Acebo and Mike Gorman

Winning strategy: Put customers, particularly its most valuable customers, at the center of every business decision

System anatomy: Teradata database running on Unix OS; NCR servers; Hyperion business intelligence software; Teradata Warehouse Miner and SPSS Clementine for data mining

Business value: Continental experienced a \$40 million increase in revenue in 2002 and had annual cost savings of \$31 million. The system also prevented more than \$15 million in fraud in 2001.

Initial investment and maintenance: \$25 million over five years on hardware, software and development resources

IT executives: Janet Wejman, senior vice president and CIO; Alicia Acebo, data warehousing director

Business sponsor: Mike Gorman, senior director for customer relationship marketing

DELL INC.

High-tech
Round Rock, Texas
www.dell.com
Revenue: \$35.4 billion
Employees: 40,000

Winning system: The Integrated Dell Desktop (IDD) call center system presents a unified view of the customer, integrated from all available sales channels, and gives Dell sales agents access to updated product data. The IDD increases operational efficiency, improves the customer experience and facilitates Dell's globalization efforts.



Randy Mott and Susan Sheskey

Winning strategy: Aligned systems and strategy with its corporate direct-sales business model

System anatomy: Web services; Dell Power-Edge servers; Microsoft Visual Studio for development

Business value: The average time per sales call has been cut by 10 percent, and the sales close rate has increased by 0.2 percent to 0.5 percent. Because IDD is easier to use, sales agents' training time has been pared by 45 percent.

Initial investment and maintenance: \$2 million; \$200,000 annual maintenance

IT executive: Randy Mott, senior vice president and CIO

Business sponsors: Michael George, vice president and chief marketing officer; Susan Sheskey, vice president of sales, marketing, services and Dell IT

THE GUARDIAN LIFE INSURANCE COMPANY OF AMERICA

Insurance
New York City
www.glic.com
Revenue: \$7.2 billion
Employees: 5,500 employees; 2,700 field agents

Winning system: Transcend, a Web-enabled insurance and annuity policy administration system, enables real-time, automated annuity processing. The system helps Guardian build valuable relationships with powerful broker dealers, a distribution channel it could not leverage with its legacy application.

Winning strategy: Maintained tight business and IT alignment

System anatomy: Magic fourth-generation programming language links J2EE and .Net Web services; Web applications run on PCs that access IBM AIX server over a TCP/IP network in real-time; Oracle database

Business value: Transcend has reduced back-office operating expenses by 40 percent. The time to market for new products shrunk from more than six months to three or fewer.

Initial investment and maintenance: \$13 million to date; \$1 million annual maintenance



Dennis Callahan (left) and Bruce Long

IT executive: Dennis Callahan, executive vice president and CIO

Business sponsor: Bruce Long, executive vice president of equity products

KORN/FERRY INTERNATIONAL

Professional services
Los Angeles
www.kornferry.com
Revenue: \$394 million
Employees: 1,400

Winning system: The Management Assessment System streamlines the process of creating and evaluating job success profiles of executives. The system helped Korn/Ferry expand beyond recruiting into the management assessment business—the evaluation of individual and collective management performance.



Dan Demeter (left) and Gary Hourihan

Winning strategy: Used existing database of executive search candidates to establish statistically validated best-in-class job profiles

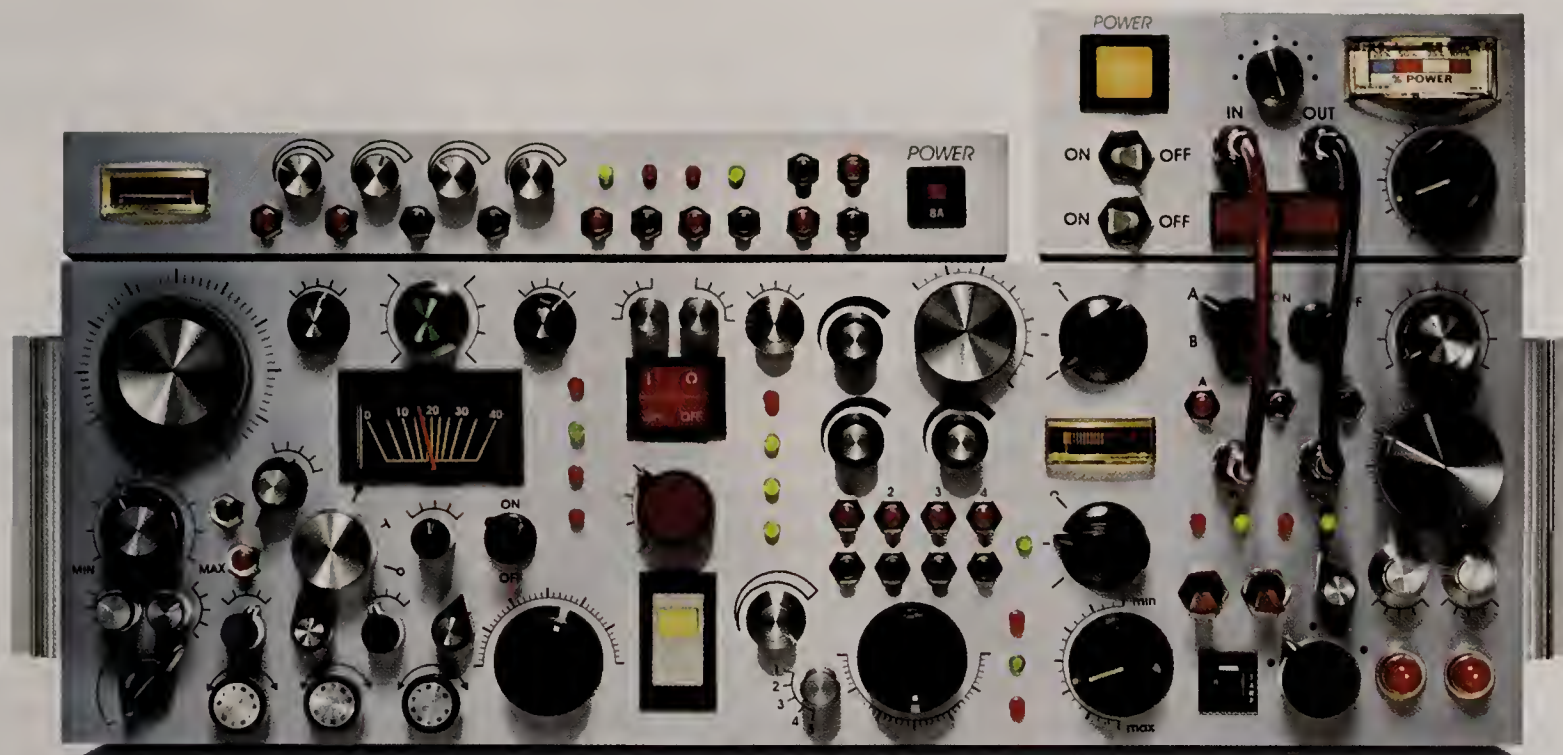
System anatomy: Three-tiered application; HTML Web front end hosted across multi-server Microsoft IIS Web farm; proprietary middle tier written in Visual Basic 6.0 and hosted within COM+; data stored in SQL tables and transferred to XML using technology developed in-house

Business value: Revenue from management assessment increased by more than 50 percent as of April 2003 compared with the previous year.

Initial investment and maintenance: \$773,000 development; \$134,000 annual maintenance

IT executive: Dan Demeter, senior vice president and CIO

Business sponsor: Gary Hourihan, president of Korn/Ferry's strategic management assessment business



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PFIZER INC.

Health care
New York City
www.pfizer.com

Revenue: \$32.4 billion (prior to Pharmacia acquisition)

Employees: 120,000

Winning system: Web-based Investigator Net automates the capture of, and provides real-time access to, clinical trial data from more than 2,000 clinical trial sites.

Winning strategy: Developed system with close collaboration among IT staff and clinical teams



Adrian Otte (left) and Walter Hauck

System anatomy: J2EE application; BEA WebLogic application server cluster; Oracle database

Business value: Pfizer attributes to Investigator Net an average yearly return of \$35.3 million from the reduced number of costly data queries, a 20 percent efficiency improvement due to less rework and the ability for Pfizer staff to return to other projects faster.

Initial investment and maintenance: \$2.5 million; annual maintenance and support cost \$11.3 million

IT executive: Walter Hauck, vice president of informatics for Pfizer Global Research & Development

Business sponsor: Adrian Otte, senior vice president of Pfizer Global Research & Development

THE PROCTER & GAMBLE CO.

Manufacturing
Cincinnati
www.pg.com

Revenue: \$43.4 billion

Employees: 98,000

Winning system: The Corporate Standards System is a single repository of technical standards data for each of the 55,000 products P&G makes. The system facilitates standards access and information-sharing by P&G researchers, purchasing managers and partners.

Winning strategy: Consolidated myriad databases into a single global repository for technical standards data

System anatomy: Matrix PLM back-end database with business logic and enhanced code developed in Java; HP application servers running HP-UX 11.0; BEA Systems' WebLogic Web server; and Oracle

Business value: The system has contributed to an annual reduction in direct materials purchasing that totals in the hundreds of millions of dollars. Better access to technical standards has shortened cycles for new product discovery and formulation. For example, product spec approval time decreased by 70 percent.

Initial investment and maintenance: \$14 million over three years for the first phase



Steven David (top),
Nancy Demoret and Dan Blair

IT executives: Steven David, CIO; Geoff A. Smith, director of IT in Global Applications division (retired); Nancy M. Demoret, associate director for IT in Global Applications R&D

Business sponsor: Dan R. Blair, director of worldwide technical standards

WORLDSPAN LP

Travel
Atlanta
www.worldspan.com

Revenue: NA

Employees: 2,700

Winning system: LINK is an order management and provisioning system for customers of Worldspan's travel industry technology products and services. LINK streamlines customer order processing by providing a single global



Sue Powers

view of customers. It facilitates legacy system and supply chain integration, as well as automated scheduling and order fulfillment.

Winning strategy: Reengineered business processes to achieve business and IT strategic alignment

System anatomy: Three-tiered architecture; Web-enabled environment; developed primarily with Microsoft Visual Studio

Business value: Operational and process improvements have saved Worldspan \$5.5 million since the system was deployed in September 1999.

Initial investment and maintenance: \$1 million; \$151,100 average annual maintenance

IT executive: Sue Powers, CIO and senior vice president for Worldwide Product Solutions division

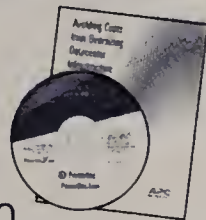
Business sponsors: Rakesh Gangwal, chairman, president and CEO; Paul J. Blackney, company director and special adviser (retired)

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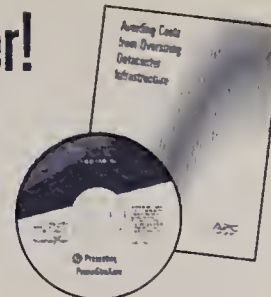
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Erik Ubels, CIO
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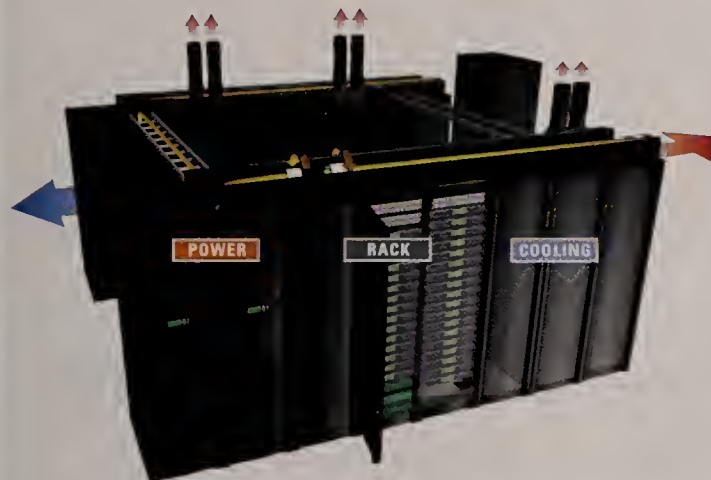
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Buying one security product containing an arsenal of capabilities is convenient, cheap and potentially dangerous

Thinking Inside the Box

BY JOHN EDWARDS

SECURITY | Like the mosquitoes that relentlessly swarm across the 49th state every summer, plagues of viruses and hack attacks continuously assault the University of Alaska-Anchorage's network. The school's CIO, Richard Whitney, hates hackers as much as he hates insects that bite. That's why, like a growing number of CIOs, he's decided to take an aggressive, "Swiss Army knife" approach to network defense by installing an integrated security gateway (ISG). "We like the idea of [having] intrusion detection, firewalling and inbound virus detection in one box," he says. "Most CIOs are in a position today where they're being forced [by cost and convenience issues] to consider this [approach] really seriously."

To help enterprises that are battling network threats on multiple fronts (worms to spam to application vulnerabilities) several hardware vendors are now offering ISGs that combine an arsenal of security capabilities—such as intrusion detection and prevention, virus scanning, spam blocking and Web content filtering—in a single box. Many integrated products also incorporate a firewall and VPN support.

For many CIOs, the technology's biggest drawing card is its cost. A single box is generally less expensive than an amalgamation of dedicated security appliances. ISG vendors also tout enhanced performance. A single ISG is less likely to create a network bottleneck than an array

of standalone hardware and software products. Other looked-for and promised benefits include simplified security management from a single interface and enhanced network protection, as a properly designed ISG should be less vulnerable to security gaps than an ad hoc collection of boxes and software.

The Case for Integrated Packages

"ISGs are a trend that's been gathering steam over the last three or four years," says Phil Schacter, vice president and service director of the directory and security strategies service for IT research firm the Burton Group. "Multi-function security appliances are definitely a growth market." The field's major vendors now include BorderWare Technologies, Fortinet, Inkra Networks and Internet Security Systems. Other important players are CipherTrust, Mirapoint, NetScreen Technologies and Symantec. ISG prices range from about \$10,000 to

products processing traffic all in a relatively short period of time." Additionally, and unlike software-based security products, ISGs don't rob servers or clients of their CPU power. "Security can't be the choke point of your throughput," says Jason Wright, a security industry analyst at technology research firm Frost & Sullivan. "It gets to be that way by trying to scan every packet of information, apply the rules to it and then pass it along."

Not All Boxes Are Alike

While all ISGs offer multiple protection capabilities, specific functionality varies greatly between products. Internet Security Systems' Proventia device, for example, has a full complement of network security capabilities, including VPN, firewall, antivirus, intrusion detection and prevention, and content and spam filtering. Other systems, particularly those that are e-mail oriented (see "E-Mail

A single box is generally less expensive than an amalgamation of dedicated security appliances.

\$50,000, depending on a product's functions and performance level. Such prices can be tempting to budget-conscious CIOs, as a standalone entry-level hardware firewall and VPN box can run anywhere from \$3,000 to \$10,000.

ISG vendors are also taking advantage of the fact that CIOs now view security as a multifaceted strategic issue—for instance, when weak spam filters can also make a network more vulnerable to virus attacks—rather than a series of isolated problems. This trend is motivating many CIOs to turn away from dedicated security boxes and software tools and move toward integrated products.

ISGs have the potential to perform better than either dedicated security devices or software-based security tools. "There's a problem if you have to put several of these products in series, just chaining traffic through them," says Schacter. "There's a problem maintaining appropriate throughput speeds and in the complexity of having multiple prod-

ucts processing traffic all in a relatively short period of time." Additionally, and unlike software-based security products, ISGs don't rob servers or clients of their CPU power. "Security can't be the choke point of your throughput," says Jason Wright, a security industry analyst at technology research firm Frost & Sullivan. "It gets to be that way by trying to scan every packet of information, apply the rules to it and then pass it along."

Many vendors are also beginning to equip their products with at least some form of intramodule communication, a feature that allows ISG components to collaborate to provide a unified security defense and enhanced performance. Intramodule communication allows an ISG to take information collected by one component and apply it to another. An intrusion detection component that detects unusual e-mail behavior, for example, could automatically tweak the spam filter to block a suspicious flow of incoming junk mail.

Fortinet, for example, includes a cross-module "policy engine" that allows the firewall, VPN, intrusion detection and antivirus modules in its FortiGate ISGs to share data. "This allows for maximum efficiency, so the [ISG] only has to inspect a packet once," says company spokesman Mike Haro.

E-Mail Alert!

Blocking spam and viruses

Integrated security gateway (ISG) vendors have two good, if not exactly trusted, friends: virus authors and spammers. Even CIOs who are content to leave network security to dedicated products may want to take a more integrated approach to e-mail threats.

The growing volume of viruses and spam, as well as the failure of client-level security tools to deal with these problems effectively, are what drove Dave Garrett, CIO of Baptist Health Care, to adopt centralized and integrated e-mail security countermeasures. "We tried a few different desktop tools," says Garrett. "They did the job OK, but the maintenance—keeping them up-to-date and all that—was just a phenomenal exercise."

Garrett, who uses CipherTrust's IronMail system, says the product's impact on his network—which receives an average of 4,000 external e-mails daily—was immediate. "We're snagging about 1,500 spam messages a day," he says.

The technology also provides encryption, security policy management and virus road-block functions. Centralized administration means that threats can be handled without requiring end users to take any action.

Jason Sosinski, security administrator for American Residential Services, a national home improvement services provider, uses BorderWare MXtreme technology to divert spam from his network's 2,500 e-mail users. Two units serve as gateways to the company's mail servers. "[In October 2003], we processed 1.5 million e-mails," says Sosinski. "Of those, 48 percent were identified as unsolicited bulk e-mail." MXtreme also protects against viruses, worms and denial-of-service attacks.

Like Garrett, Sosinski appreciates the technology's centralized approach to e-mail threat management. "We spend less than five minutes a day on administration tasks," he says.

—J.E.

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Faster Detection

For University of Alaska's Whitney, the decision to acquire and deploy an ISG was easy. On the virus front, more than 20,000 network users required faster and better-administered protection than individually installed virus scanners on clients could provide. Whitney also wanted to add fast intrusion detection and prevention capabilities to his network.

"In spring 2002, we began looking carefully at system and network security, and looked at individual firewalls, intrusion detection systems and so on," says Whitney. He chose a Symantec 5300 Gateway Security Appliance, a \$40,000 unit that features firewall, antivirus, intrusion detection, content filtering and VPN capabilities. Whitney felt that the product offered the best performance and function mix for the price. "I didn't do any [total cost of ownership] comparisons between solutions, but in the end we were impressed by the single-product architecture, ease of use and implementation, and the fact that our already overworked systems engineer could administer the gateway with little additional overhead," he says.

With nearly two years' worth of experience under his belt, Whitney believes his ISG "continues to do what we're expecting of it." Focusing functions at a single point has simplified his network management chores and enhanced

gic sourcing, estimates that in 2003, with 5,000 users connected, the product provided a 26 percent ROI, the result of migrating users off of licensed software for virus scanning and Web and e-mail filtering. Taking into account recurring software support and license fees, Anton predicts the product's ROI will rocket to 118 percent in 2004, 177 percent in 2005 and 213 percent in 2006.

Trade-Offs, Downsides and Traps

As ISGs join the enterprise, however, CIOs are discovering that the technology's strengths generate their own set of problems.

"There's definitely less management work required [with an ISG], but it also means you give up some level of your own control," says John Pescatore, an Internet security analyst for Gartner. Frost & Sullivan's Wright agrees: "There are fewer knobs to tweak and fine-tune, so you may not be able to get it as perfectly in sync with the network traffic."

Another mixed blessing is an ISG's ability to consolidate network security to a single point. Besides providing simplicity, consolidation can also make a network more vulnerable to a sudden, unexpected failure. "If the power supply fails, for example, it could take out four different functions," notes Pescatore. "One definitely has to look for

To guarantee performance, CIOs should stick with certified integrated security gateways.

overall security. "Had we not had this [unit] in place, our limited staff would be running all over the place," he says. "Things would be fairly unmanageable, particularly for our primary enterprise-class servers. You can't operate an enterprise without a tool like this."

ISG deployment can also boost an enterprise's bottom line. Illinois Tool Works, an industrial components and systems manufacturer, is using Mirapoint's Message Director ISG to combat spam and viruses. Gary Anton, the company's vice president of strate-

redundancy and think through the availability issues."

Deploying an ISG doesn't necessarily remove the need for maintaining a multilayer security infrastructure. "When you try to put everything on one box on the [network] perimeter, if [a hacker] gets past that box, he's in," says Wright. "Unless you have other technology on your host, servers or desktops, you could lose the capabilities of having multiple security technology." That's why many enterprises, even after adopting ISG technology, still choose to

IT Security Spending Grows

"In 2002, enterprises spent, on average, **4.3%** of their IT budgets on security. Our projection for 2003 is **5.4%.**"

—John Pescatore, Internet security analyst, Gartner

protect networks at key points.

"This move to a multifunction security appliance doesn't mean we've eliminated the strategy of having zones where we have two discrete firewalls in place," says Burton Group's Schacter. On the other hand, beyond securing network entry points, most ISG functions don't benefit from duplication. "Like the process of scanning for a virus, this doesn't benefit from being done in two boxes rather than one," he says.

By concentrating key security functions in a single box, ISG adopters also give up a significant amount of flexibility, specifically the ability to cherry-pick the best security technologies from multiple vendors. Since no CIO wants to embrace mediocrity, ISG vendors are beginning to offer products that include one or more category-leading security functions. "Just because these combinations are occurring to save costs doesn't mean that enterprises will be abandoning best-of-breed," says Pescatore. "For years to come, [CIOs] will want at least one of the functions in these combined gateways to be considered best-of-breed by its own right."

Finally, like many dedicated security boxes, ISG performance is typically boosted through

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the use of application specific integrated circuits (ASICs), chips that are “hard-wired” to process specific tasks. But ASICs are “expensive, and you can’t change them, so there are upgrade issues,” notes Wright. Dedicated ASIC-powered security devices also present upgrade problems, and ISG owners may face the need for more frequent upgrades since ISGs provide multiple functions, each one vulnerable to obsolescence.

Picking Performance

The top priority for a CIO choosing an ISG is finding a product that includes all of the features he needs for complete network protection. Yet performance is at least as important a consideration as functionality. After nearly two years, Whitney is already planning to replace his Symantec 5300—which has a 100Mbps top data transfer rate—with a speedier model. “We just upgraded our network to gigabit, so this is going to be an issue for us, probably within the next six months,” he says.

Speed is essential. “When security solutions slow down the network, people generally find ways around the security solution,” notes Gartner’s Pescatore. To guarantee performance and avoid potential operability headaches, Pescatore advises CIOs to stick with certified ISGs. “The [certification] most enterprises are looking for is called Common Criteria certification—it’s done by government-approved test labs,” he says.

Despite the technology’s growing pains, ISGs are expected to become the enterprise norm during the next few years, pushing aside dedicated security appliances. “I think that in three or four years they will be mainstream,” says Schacter. Pescatore believes that ISGs are reshaping the security market, leading to the emergence of a basic network security appliance. “The markets themselves are combining, collapsing into one market,” he says. “We’re just calling this The Next-Generation Firewall.”

John Edwards is a technology writer based in Gilbert, Ariz. He can be reached via e-mail at john@john-edwards.com.



Death to Drivers

CONNECTIVITY | At one time or another, device drivers have likely been the bane of your existence. The tiny bits of code that let one device connect to another have variably been buggy, incompatible with new operating systems or simply nonexistent. Now the Palo Alto Research Center (PARC) is proposing an alternative that would do away with traditional device drivers forever.

The system, called Obje, is a software framework that allows devices to “teach” each other how to communicate. For example, an Obje-enabled digital camera could be connected to a TV-top box running the Obje framework, and the two devices would immediately be able to talk and take advantage of each other’s features. One device could even send “mobile code” (in Java, C# or some other language) to another device to establish or enhance the connection with new features. And Obje doesn’t care how it connects: The Internet, USB ports and Wi-Fi connections are all possible options.

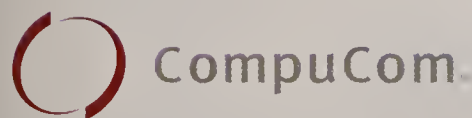
Besides its simplicity, Obje’s best feature may be how it scales to the future. Obje-

enabled devices would automatically be able to take advantage of new technology from day one. If someone develops an Obje-ready 3-D camera, for instance, it could connect to any Obje-framework device without the need for software updates or driver disks.

Of course, a technology that can send mobile code from one device to another where it runs automatically will undoubtedly scare a few security pros. “[Objé is] raising some interesting opportunities,” says Hermann Calabria, principal of business development at PARC, “but it also raises a few eyebrows.” Calabria says PARC scientists have taken those concerns into consideration, however, and have included a number of security options, including the capability to have code digitally signed to help guarantee its safety.

Objé has been under development for three years and is just now ready for commercialization. PARC is looking for partners to bring the technology to market. For more information, visit www.parc.com/obje.

—Christopher Lindquist



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The Velvet Revolution

BY ERIC KNORR

Portals have become valuable corporate tools—now what?

PORTALS | Last month, I wrote about the forthcoming Longhorn version of Windows and Microsoft's plans to eliminate the distinction between client and server by making Web services protocols part of every Windows application. It's a fabulous idea—when and if the whole world runs Longhorn, which will arrive in 2005 if Redmond is lucky.

Meanwhile, a countertrend is shuffling toward a similar goal from the opposite direction: boosting the number, integration and functionality of thin, browser-based clients. Increasingly, the framework for all those thin clients is the business-to-employee (B2E) enterprise portal. Employee-facing portals began with knowledge management, but during the past few years, Java portal servers have provided an organizing principle for Web app integration and development. The dream is a single-sign-on B2E portal tailored to each user, where everything from self-service HR to core business apps sit under a single Web interface.

Recession-Proof

During the downturn, when enterprises killed other tech initiatives, many portal projects kept rolling, mainly because the benefits were so clear. I'm not talking about vague, top-down plans to give every employee a MyCompany page with a Reuters feed and the CEO's latest quotes. The consultants and customers I've talked to say the most successful implementations have been from the bottom up—to serve

specific departments that need to automate a related set of functions.

Sounds like the usual app dev agenda, right? But when you throw a portal server at the problem, you can pull together applications that already exist, from Web-based conference room scheduling to a subset of SAP R3. The portal server's profiling and identity features can then handle security, authorization and self-service customization.

Most portal projects begin as integration projects. But increasingly, portal servers bring a lot to the party by themselves. In a process known as "integration at the glass," developers and even savvy end users can link portlets and create composite applications. IBM has been cultivating a community of third-party portlet providers for its WebSphere Portal. And BEA's WebLogic Workshop has done the best job so far of helping developers whip up Web services applications that provide a portal-based user interface.

Portal Portents

Customer lock-in is one effect of the proprietary development environments that run atop these stacks of portal, integration and application servers. But two new standards are working against lock-in: Web Services for Remote Portals (WSRP) and Java Specification Request (JSR) 168. WSRP lets any server publish a Web service for consumption by any portal, as long as both comply with the stan-

During the downturn, when enterprises killed other tech initiatives, many portal projects kept rolling.

—Eric Knorr

dard. And JSR 168 lets developers write a portlet once to run on any J2EE portal server. Both standards will eventually help IT spread portlets across the enterprise.

But those portals will never take on desktop functionality. Look at e-mail. Outlook is so much better than Web-based e-mail, for example, that you could never ask users to settle for an HTML interface.

Or could you? IBM has already released a browser-based version of Notes, targeting workers who don't sit at desks. You could use dynamic HTML, Flash or client-side Java to create enriched versions of browser-based applications. Then you don't need to wait for Microsoft to reinvent the wheel with Longhorn in order to have "desktop" applications that are fully integrated into the enterprise infrastructure. It's a thought—especially when you think about how much lower the licensing costs would be. And it's got to be Microsoft's worst nightmare.

Eric Knorr is executive editor at large for *InfoWorld* magazine. He can be reached at eknorr@pacbell.net.

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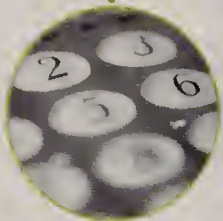
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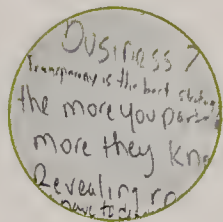
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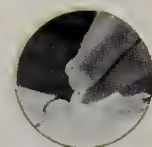
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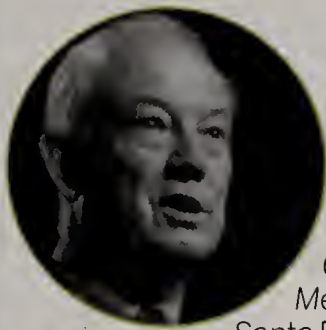
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Globalization touches all
organizations. What do your
policies say about your politics?

Corporate and Personal Ethics

The recent wave of business scandals
shows how far many have strayed from
ethical behavior and the concept of
moral courage. How do we bring back
these values?

Governance and Risk Management

How can your organization's
structure help ensure the safety of
your electronic and physical assets?

Learning from a Crisis

A run of nasty viruses and a major
power blackout provide several
lessons we can take to heart.

Politics and Policies with a Capital P

It's an election year; no candidate is
really talking about "IT issues"—but a
new spate of proposed legislation will
impact the CIO's job.

Running IT Like a Business

Research findings and best practices
on everything from finance to staffing
to marketing/communications.

Standards

What are the high stakes battles
and how will the outcome shape
products and services?

Software Quality

The complaints about the overall lack of
quality of major commercial software
are endless. What can and is being done
to make it better?

Technology Fear Factor

Are we stifling innovative products and
services because CIOs are afraid to buy
from small firms and start-ups?

Reality Bites

Many enterprise applications turn into
major disappointments, if not disasters.
Were they over-hyped? Were our
expectations unrealistic? What
separates winners from losers?



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Summaries

February 15, 2004

12TH ANNUAL CIO ENTERPRISE VALUE AWARDS

GRAND WINNER Taking IT to the Street

By Richard Pastore | 56

The Chicago Police Department, winner of the 2004 Grand CIO Enterprise Value Award, is leading the way in using IT to enable intelligence-driven policing. With nothing available to buy that met its vision, Chicago partnered with Oracle to develop a central database and the application suite that today puts 8.5 million arrest records at the fingertips of patrol officers, detectives and administrators. Chicago's pursuit of its IT vision has been methodical and tenacious. Obtaining and maintaining funding, overcoming user resistance and laboring through drawn-out training periods have been a continuous struggle. The biggest success factor in the system's acceptance by the force has been the use of officers to both design and test applications, and then to conduct the user training. The police say the system has significantly improved their ability to solve and reduce crime. For example, tools help identify crime patterns, leading to predictive analyses that allow police to be redeployed to hot spots *before* they flare up. The system has also had a huge impact on productivity, with \$88 million in labor savings.

"All our technology tools have been developed by members for members. It isn't some vendor coming in and saying, This is what you need."

—BARBARA MCDONALD,
DEPUTY SUPERINTENDENT OF
ADMINISTRATIVE SERVICES,
CHICAGO POLICE DEPARTMENT

No Small Change

By Todd Datz | 66

THE CHICAGO POLICE DEPARTMENT, Guardian Life Insurance, Pfizer and Procter & Gamble all have great change management to thank for the success of their CIO Enterprise Value Award-winning IT systems. They relied on well-thought-out change strategies that encouraged user input during development, ensured commitment to proper training and kept the lines of communication open at all times. This kept IT employees focused on how the new systems would help the organizations achieve their long-term goals, which helped during the dark days on the projects. Other lessons learned included the scale factor: Things that work in pilots don't always scale well to an enterprise or global level. Pilots often succeed because they have extra people working on them—resources that will likely disappear once the project rolls out. These organizations also took pains to manage their whole portfolio of change: Too much going on inside a company at once will always be too hard to manage.

They Got It Together

By Lafe Low | 74

WHERE THERE IS A SUCCESSFUL AND EFFICIENT integration strategy, there is enterprise value, as proven by CIO Enterprise Value Award winners Academic Management Services (AMS), Dell, Procter & Gamble and Worldspan. In creating its winning system, P&G took on the huge task of cataloging its thousands of technical standards to expedite research and development. Dell developed an internal sales tool that provided its agents with more complete product information to help close sales. Worldspan consolidated databases for more efficient delivery of services. And AMS consolidated several systems, linking them through a single user portal, to empower its loan officers to present customers with more comprehensive options and allowing it to enter a new line of business. Among the winners' success strategies was insistence on a single point of access to customer data, which saved the IT departments time and expense by not having to cross-reference or maintain multiple databases.

Getting to Know Them

By Meredith Levinson | 84

SINCE THE MID-1990S, companies have been trying to make all those gigabytes of customer data pay off. Four of this year's CIO Enterprise Value Award winners found high-value ways to leverage that data to their advantage. Student loan provider Academic Management Services expanded into the lucrative loan consolidation market by developing a new universal interface between its diverse customer- and product-based information systems. Recruiter Korn/Ferry International bolstered its executive talent assessment business with a system that automates the company's esoteric process for gauging an executive's leadership capabilities. Both Continental Airlines and retailer Ace Hardware built enterprise data warehouses that boosted customer loyalty through more effective target marketing, and increased profitability through more powerful pricing structures. One of the keys to success these companies shared was making sure the technology was invisible to customers—to prevent it from entering the relationships of customer-facing employees.

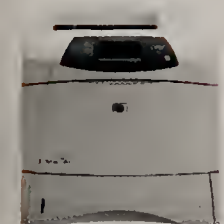
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